Installation and User Guide

# **HP** StorageWorks Command View SDM for Disk Systems

## **Version 1.09**

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## Format Conventions

| | |
|---|---|
| **WARNING** | Identifies a hazard that can cause personal injury |
| **Caution** | Identifies a hazard that can cause hardware or software damage |
| **Note** | Identifies significant concepts or operating instructions |

`this font` - used for all text to be typed verbatim: all commands, path names, file names, and directory names also, text displayed on the screen

*<this font>* - used for variables used in commands

this font - used for GUI menu options and screen controls

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## Revision History

July 2002

| Change | Page |
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| Added firmware download issues. | 83 |
| Added -b and -v options to JBODdsp -i command. | 85 |

November 2002

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| Clarified use of multiple device IDs when downloading firmware. Also added -d option to JBODdld command | 82 |
| Added -ST option to JBODmgr command. | 89 |

January 2003

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|---|---|
| Removed Enterprise Intergrations as a stand-alone product. It is now shipped with Command View SDM. | 11 |

Septermer 2003

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| Updated GUI figure with License tab. | 74 |
| Added license chapter | 107 |
| Added licApp, licUtil, and secadim commands | 113, 91 |
| Added informatio on HP StorageWorks SMI-S VA | 68 |

July 2004

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| Updated to Free permenent license for Command View | 12 |
| Updated OS Support | various |
| Updated HP OpenView Storage Area Manager info | |
| Updated SMI-S information | |

August 2004

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| Updated Figure 1 | 23 |
| Updated HP-UX minimum requirements and patch location details | 26 |
| Updated SLP binaries location on CD and web | 62 |
| Added addcliuser command | 91 |
| Updated secadmin command | 91 |
| Added HP-UX 11.00 to OS Support | various |

February 2005

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| Added HP-UX 11.23 IA, 11.23 PI on PA, and 11.23 PI on IA to OS support | 18 |
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# Product Description

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HP Command View SDM software is designed to provide storage management for the HP StorageWorks Disk System. This software, included on the HP Command View SDM CD-ROM, provides simple, yet sophisticated device management tools for the disk system.

Some of the features and benefits offered by Command View SDM include:

- Lets you manage an unlimited number of HP Disk Systems from a graphical user interface (GUI), command line user interface (CLUI), or web browser.
- The GUI uses Java technology to create a common application for all supported operating systems
- Easily spans your storage system as it grows from entry level to midrange and enterprise-wide.
- Goes from out-of-the-box to up-and-running faster than any other device management solution.
- CV SDM 1.09 is packaged with every virtual array.
- Provides unlimited web-browser support.

# Command View SDM Software

The Command View SDM product includes the following items:

- HP StorageWorks Command View Disk System Installation and User Guide
- Software Installation CD-ROM

## The Software Components

The *Command View SDM CD-ROM* contains all the software required to manage the HP Disk System products. The software components include:

- **Installers** - provided for Windows (2000/2003), HP-UX, and Linux Red Hat.
- **Command View Utilities** - the underlying code, these utilities are invoked by the user interfaces to perform all management tasks.
- **Three User Interfaces**
  - Graphical User Interface (GUI) - a Java-based interface that simplifies management. Most management tasks can be done using the GUI.
  - Command Line User Interface (CLUI) - a full suite of commands that provide access to the full capability of the management utilities.
  - Command View User Interface (CVUI) - adds a menu-based text interface front end to the command lines. This interface provides access to full command line functionality without requiring you to memorize all the commands and options.
- **HostAgent & OpenDIAL Services (or daemons)** - these services control the operation of the Command View SDM software. OpenDial is responsible for discovering what disk systems are visible to the host, and HostAgent manages the server components of the software.

  If Command View is installed on a Windows host that is running HP OpenView Storage Area Manager, the HostAgent and OpenDial services are not used. The HP OpenView Storage Management Server service is used to integrate the Command View software with OpenView.
- **README file** - contains updated support and installation information.
- **Book files** - electronic copies of the product documentation are included for your convenience.

## Event Reporting Software

Internal events in the disk system, such as module failures which may result in degraded operations, are monitored by Command View. These events include disk, power supply, fan, and port failures, as well as voltage and temperature conditions which are out of the normal operating range.

The disk system's internal event reporting software retrieves event information from the disk system and communicates these as warnings to the user. The software also retrieves data from the controller logs of the device and transmits all significant/critical log notifications from the array and the disk devices to all event listeners.

Command View event software broadcasts these events to platform dependent targets. For example, using SNMP applications with an SNMP agent to trap the events. Command View also stores these events to system log files.

**Note** Command View SDM does not support the SNMP set feature. Device information cannot be configured from a remote host.

Event targets include:

- Windows
  - Event Viewer
  - HP OpenView (SNMP)
  - HP Top Tools (SNMP)
  - CA Unicenter TNG (SNMP)
  - BMC Patrol (SNMP)
  - Tivoli (SNMP)
  - HP EMS
  - HP Systems Insight Manager 4.2 (Nimbus)
  - Instant Support Enterprise Edition
- Linux
  - Syslog
  - HP EMS
  - HP Systems Insight Manager 4.2 (Nimbus)
  - Instant Support Enterprise Edition
- HP-UX
  - Syslog
  - HP EMS

- HP OpenView (SNMP)
- HP Top Tools (SNMP)
- CA Unicenter TNG (SNMP)
- BMC Patrol (SNMP)
- Tivoli (SNMP)
- HP Systems Insight Manager 4.2 (Nimbus)
- Instant Support Enterprise Edition

Events are categorized as Information, Minor Warning, Major Warning, Serious, and Critical. These events also provide descriptions useful for troubleshooting. A current list of events is available from the HP web site:

http://docs.hp.com/hpux/content/hardware/ems/RemoteMonitor.htm

# HP StorageWorks SMI-S for Command View VA disk arrays

Hewlett Packard supports the new storage standard called the Storage Management Initiative Specification (SMI-S). Hewlett Packard is a contributing member to the Storage Networking Industry Association (SNIA), which is a technical organization chartered to build seamless multi-vendor storage management networks.

The SMI-S specification standardizes the interface for SAN management, device control architectures and associated interfaces. The SMI-S specification enables storage vendors to develop products to a single interface that eliminates the need for custom integration by end users to integrate storage devices into their environment.

To ensure that the standard has been properly implemented, SNIA has created a series of independent third-party conformance tests that verify the accuracy of the vendor's implementation. Hewlett Packard was one of the first storage vendors to successfully exit the SNIA conformance testing program.

Secondary benefits of Hewlett-Packard's support for SMI-S are:

- Simplification of your storage management environment enabling you to focus on your business not managing your storage
- Reduction in cost to deploy new storage technologies by reducing the need for dedicated staff experts for each storage vendor's solution
- Increased stability of new storage technologies resulting is greater confidence to implement these technologies
- Minimize contention between vendors
- Ability to implement larger storage infrastructures with current staff

For white papers or technical discussions on the SMI-S standard, please go to: http://www.snia.org/smi/home.

# HP Modular Storage Software Products

A full line of complementary software products are available to expand the capability of the Command View SDM software. These optional products are listed in the following table. For the most up-to-date information about Modular Storage Software products, visit the HP web site.

**Table 1** Command View SDM Modular Storage Software Products

| SOFTWARE PRODUCTS |
|---|
| **Command View SDM**<br>Enables array configuration and management. Provides the foundation for value-added software products. Also includes Enterprise Integrations, which integrates Command View SDM into network management applications BMC Patrol, HP OpenView NNM for HP-UX/Windows/Solaris, HP OpenView VPO for HP-UX, and CA-Unicenter TNG.<br>— Software Package (T1086A) |
| **Business Copy VA**<br>Enables online data replication or LUN copying within the array for testing and backup, and requires the same physical space to be available in the array as the LUN(s) being copied.<br>— Software Package and 50 GB LTU* (T1007A)<br>— 500 Gbyte Upgrade (T1008A)<br>— 1 Tbyte Upgrade (T1009A) |
| **Secure Manager VA**<br>Enables LUNs to be locked into a secure shared environment.<br>— Software Package and 50 GB LTU* (T1003A)<br>— 500 Gbyte Upgrade (T1004A)<br>— 1 Tbyte Upgrade (T1005A)<br>— 5Tbytee Upgrade (T1006A) |
| **Auto Path VA for Windows 2000**<br>Enables I/O path fail-over in MSCS Windows 2000 environments with the benefit of I/O load balancing in both failed and non-failed states.<br>— Software Package and 1 Host LTU* (T1011A)<br>— 1 Host Upgrade LTU (T1012A)<br>— 5 Host Upgrade LTU (T1013A) |

| |
|---|
| **Auto Path VA for HP-UX**<br>Enables I/O path fail-over in HP-UX environments with the benefit of I/O load balancing in both failed and non-failed states.<br>— Software Package and 1 Host LTU* (T1060A)<br>— 1 Host Upgrade LTU (T1061A)<br>— 5 Host Upgrade LTU (T1062A) |
| **Auto Path VA for Linux**<br>Enables I/O path fail-over in Linux environments with the benefit of I/O load balancing in both failed and non-failed states.<br>— Software Package and 1 Host LTU* (T1044A)<br>— 1 Host Upgrade LTU (T1045A)<br>— 5 Host Upgrade LTU (T1046A) |

* - License to Use

# Operating System Support (Native)

The HP Command View software is supported on the following operating systems. Because hosts running these operating systems can both access and manage the disk system using Command View SDM, these are referred to as "native" operating systems.

- HP-UX*
- Windows 2000**
- Windows Server***
- Red Hat Linux Advanced Server****

*Command View SDM provides support for HP-UX 11.00, 11.11 (11i 32-bit), 11.23 (V2, Itanium), 11.23 PI on IA, and 11.23 PI on PA-RISC in a non-HP OpenView environment. Command View SDM does not support HP-UX 11.20.

**Command View SDM provides support for Windows 2000 Server SP4 (32 bit) and Windows 2000 AS SP4 (32 bit).

***Command View SDM will now support Window Server 2003 (32-bit).

****Command View will support Red Hat Linux version is RHEL AS 3.0 with Kernel version 2.4.21-9EL

Installation instructions for each operating system are included in Chapter 2.

## Non-Native Supported Operating Systems

In addition to the native operating system listed above, the HP Surestore Disk System is also supported on the "non-native" operating systems listed below. Hosts running these operating systems can access data on the disk system; however, Command View SDM is not supported on them. Consequently, disk management must be done from a host running one of the supported operating systems listed above.

- Sun Solaris
- IBM AIX
- Novell NetWare
- MPE/iX (VA 7100 only)
- Tru64

- OpenVMS
- HP-UX 10.20

**Note** Command View SDM provides support for HP-UX 11.23 (IA-64) in a non-HP OpenView environment. Additionally, Command View SDM does not support HP-UX 11.20.

## Sources of Support Information

The README file included on the Command View installation CD contains important support information you should read before installing and using the software. In addition, it is recommended that you visit the technical support web site identified in "Technical Support on page 20".

# Technical Support

Technical support is provided for this product through an HP Support Contract, purchased at the time you purchased this product. For details regarding support information, refer to that contract.

For a list of the most current support phone numbers, access the following HP web site:

www.hp.com/support/cvsdm

Select the **contact hp** link under the **technical support** heading for support phone numbers.

# Installing Command View SDM

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This chapter includes procedures for installing Command View SDM on each supported operating system. The installation process differs for each operating system. Once the software is installed, operation of Command View SDM is identical on all platforms.

The Command View SDM software can be installed on both local hosts for direct management of the disk system, or on a client for remote management. Remote clients must be assigned permission to manage the disk system from a Command View SDM host connected to the disk system.

If you would like some general information on the software installation process before you begin, see "Details About the Command View SDM Installation Process on page 49".

## Upgrading to a Newer Version of Command View SDM

When upgrading to a newer version of Command View SDM, always remove the previous version before installing the new software. This will ensure that the software installation will complete successfully and that Command View SDM will operate correctly.

You should also save the Command View SDM configuration files. This will allow you to easily restore the same configuration on the new software. See "Saving Disk System Configuration Information on page 43".

# Command View Installation Configurations

The installation of Command View SDM is influenced by a number of factors: the type of hosts connected to the disk system, other network management tools in use, and your management strategy.

There are three typical management configurations:

- **Native host** - shown in Figure 1, this configuration is typically used when a host accessing the disk system supports Command View SDM. Because disk management can be done from this host, the need for a separate management station is eliminated.
- **Non-native** - shown in Figure 2, this configuration is typically used when the hosts accessing the disk system do not support Command View SDM. In this environment, Command View SDM is installed on a separate management station.
- **HP OpenView Storage Area Manager** - shown in Figure 3, this configuration integrates Command View SDM into the SAM management architecture. The software is installed on the SAM management station, allowing the disk system to be managed from the same point as other storage resources.

**Figure 1** Native Host Management Configuration

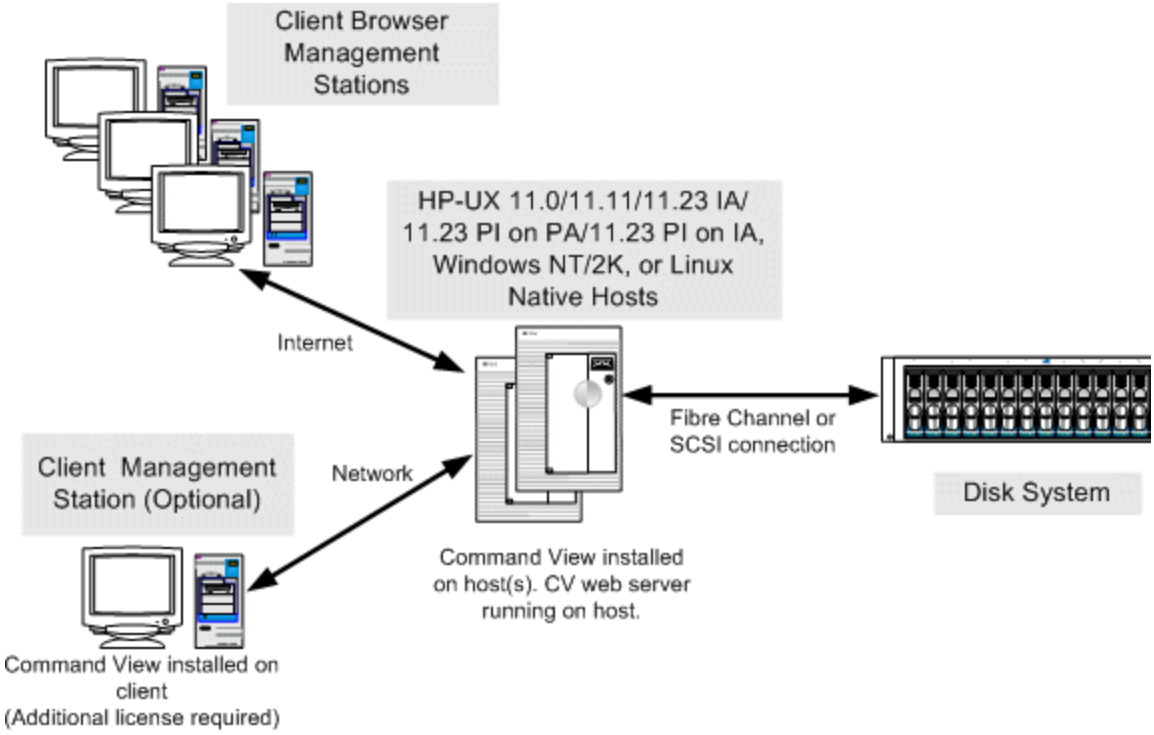


**Figure 2** Non- Native Host Management Configuration

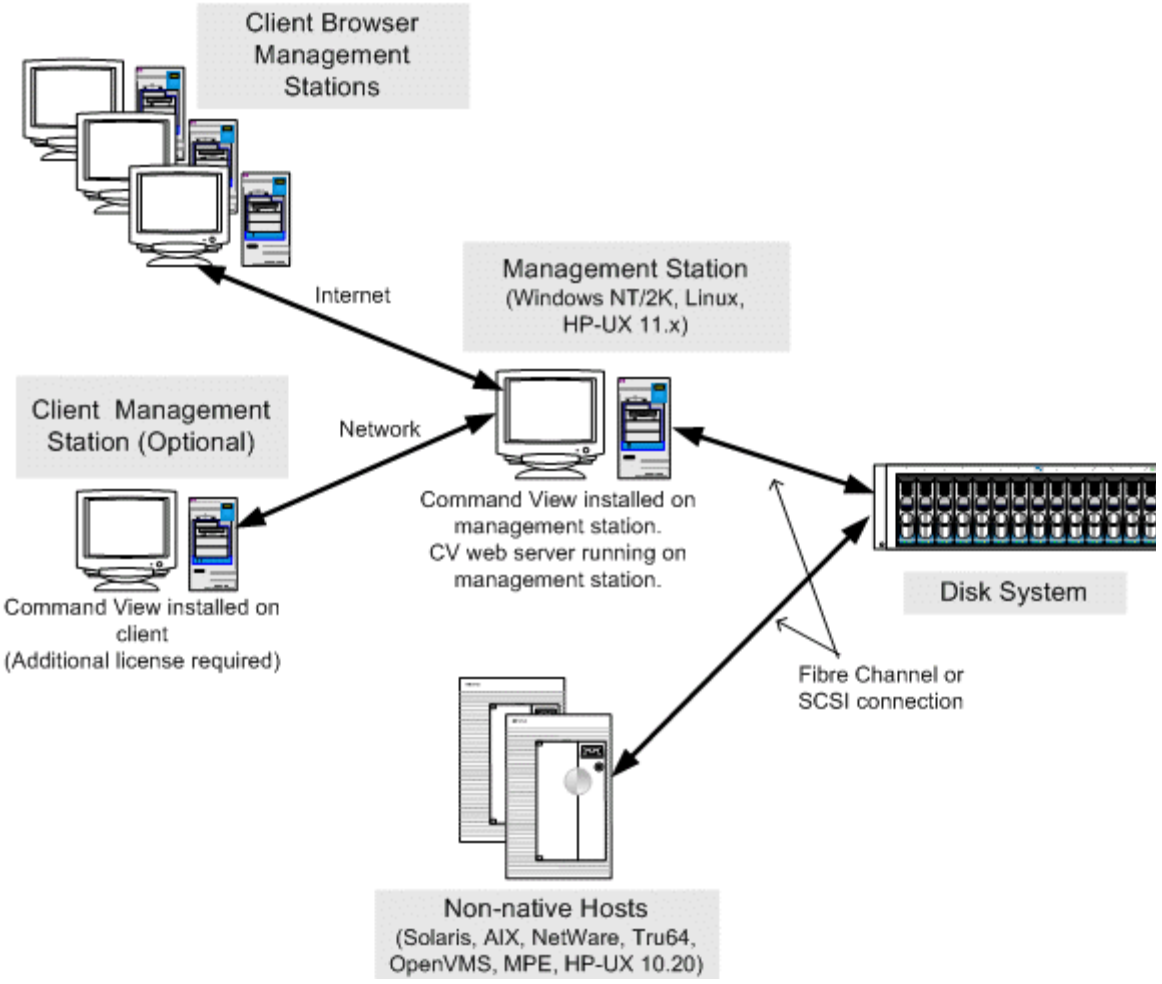
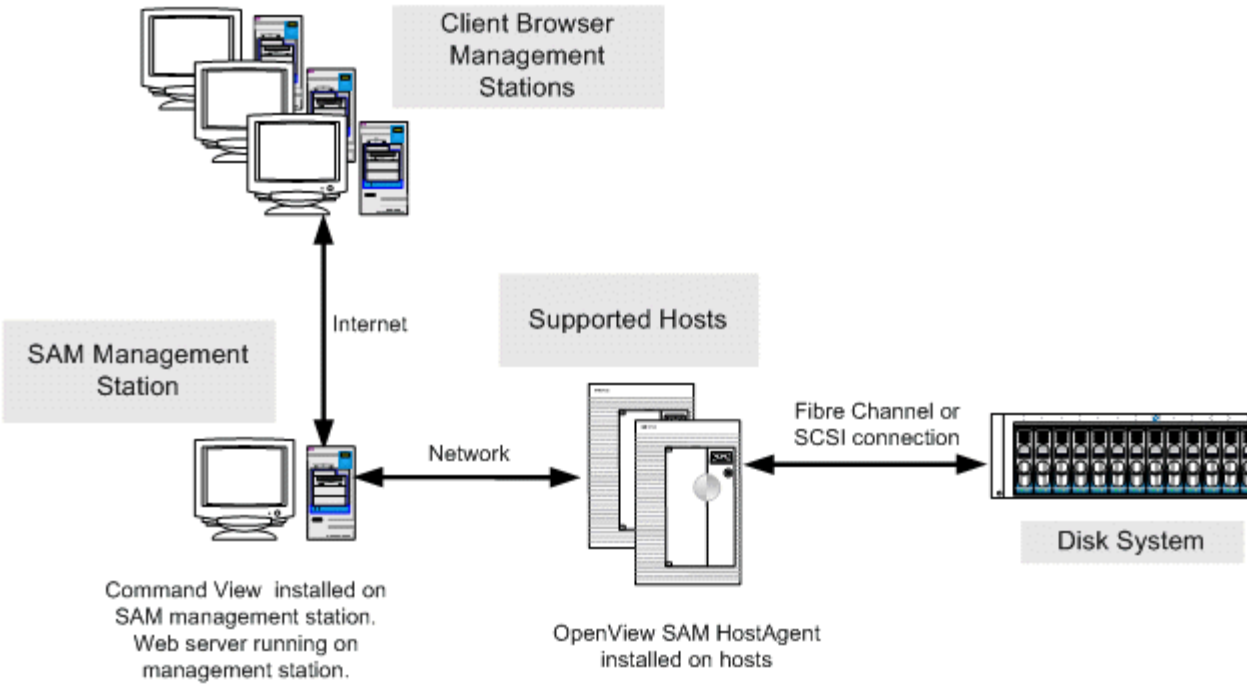


**Figure 3** HP OpenView Storage Area Manager Management Configuration



# Installing Command View SDM on HP-UX

The following procedure describes the steps involved in installing the Command View SDM software on an HP-UX host or client.

## Minimum System Requirements for HP-UX

Before installing the Command View SDM software, verify that the host meets the following minimum requirements.

**Table 2**

| | |
|---|---|
| Host | ■ HP-UX 11.00/11.11/11.23 IA/11.23 PI on PA/ 11.23 PI on IA (plus the Support Plus Hardware Enablement Bundle, version September 2001 or later)<br>■ RAM: 1 GB<br>■ Screen Resolution: 800 x 600 (for the GUI) (Recommended 1024 X 768)<br>■ Video Support: 64K colors or better<br>■ Disk Space: 60 Mbyte in the /var directory (for logs)<br>■ Directory Space for installation:<br>— /opt (230 Mbyte 11.00/11.11) (350 Mbyte 11.23)<br>— /var (less than 1Mbyte for 11.00/11.11) (1.3 Mbyte for 11.23)<br>— /etc, /usr, / (less than 1 Mbyte for 11.00/11.11/ 11.23) |

### Locating HP-UX Patches

CV SDM 1.09 delivers version 1.4.2 of the Java Runtime Environment for all HP-UX versions. You must install the relevant Java 1.4.2 patches for each HP-UX version from the following site:

http://www.hp.com/products1/unix/java/patches/index.html

Refer to the HP web site for the latest patch bundle information.

http://www.hp.com/products1/unix/java/

Support Plus Hardware/Critical Patch Bundle information can be found on the *HP-UX Support Plus* CD-ROM, or on the following web page:

http://www.software.hp.com/SUPPORT_PLUS/hwe.html

## Selecting a Host IP Address on Systems with Multiple IP Addresses

During installations where multiple IP addresses exist on a host (i.e. multiple LAN cards in a single host), only one of the IP address will be entered into the /etc/opt/sanmgr/hostagent/config/commIpAddr.txt file. If this is not the correct address, the hostagent will not communicate with the array.

After installation, check the contents of the /etc/opt/sanmgr/hostagent/config/commIpAddr.txt file. If the correct IP address is not shown, manually enter the correct IP address.

Please restart the host agent service, if 'commIpAddr.txt' file is manually modified.

## Changing Thread Count

The Command View SDM server components run within the context of a single instance of the Java Virtual Machine. In HP-UX this is a single process. Within the Command View server instance of the JVM, multiple threads of execution are running virtually concurrently. By default, a single process is limited to 64 threads. If the process attempts to spawn more threads, an `Out of Memory` error may be reported.

To avoid this situation, the thread count should be increased by setting the following kernel parameters:

`max_thread_proc` set to at least 256

`nkthread` set to twice the value of `max_thread_proc`

To determine the current values of these parameters run:

```
#kmtune | grep -e max_thread_proc -e nkthread
```

After these settings have been changed, rebuild and reboot into the new kernel.

**Note** Changing the thread count settings is only necessary if you observe `Out of Memory` errors when running Command View.

### Installation Tips

- For the latest information on installing and upgrading the software, refer to the README file on the *Command View SDM* Installation CD. The README is located in the corresponding operating system directory.
- When upgrading to a newer version of Command View SDM, always remove the previous version before installing the new software.
- Make sure EMS hardware monitoring is installed and operating on the host **before** installing Command View SDM. This will ensure that the disk system is automatically added to the EMS configuration and disk system events will be detected and reported.

## Installation Steps

1. Log onto the system as root or superuser.
2. If upgrading to a newer version of Command View SDM, save any configuration files and remove the old software. See the following section.
3. Insert the Command View SDM software CD into the CD-ROM drive.
4. Identify the device file for the CD-ROM:

```
ioscan -funC disk
```

```
eg: disk 2  8/16/5.2.0  sdisk CLAIMED   DEVICE    TOSHIBA
CD-ROM XM-5701TA
```

```
/dev/dsk/c2t2d0   /dev/rdsk/c2t2d0
```

5. Create a mount point directory. For example:

```
mkdir /cdrom
```

Use a directory that does not exist

6. Execute ps -ef |grep pfs command, to confirm if the following processes are running

```
root  2588  2587  0 15:31:18 pts/tb    0:00 pfsd.rpc
```

```
root  2586  2585  0 15:31:00 pts/tb    0:00 pfs_mountd.rpc
```

```
root  2587  2579  0 15:31:18 pts/tb    0:00 /usr/sbin/pfsd
```

```
root  2585  2579  0 15:31:00 pts/tb    0:00 /usr/sbin/
pfs_mountd
```

```
root  2592  2579  2 15:31:30 pts/tb    0:00 grep pfs
```

7 If the above processes are not running, execute the following commands,

```
/usr/sbin/pfs_mountd &
```

```
/usr/sbin/pfsd &
```

8 Mount the CD device file using the device file and directory from the preceding steps.

For example: pfs_mount -t rrip -o xlat=unix /dev/dsk/c2t2d0 /cdrom

9 Run swinstall using the appropriate command:

HP-UX 11.00

```
swinstall -s /cdrom/CommandViewSDM/hpux/
cvsdm_11_00_v109.depot
```

HP-UX 11.11

```
swinstall -s /cdrom/CommandViewSDM/hpux/
cvsdm_11_11_v109.depot
```

HP-UX 11.23 IA and HP-UX 11.23 PI on IA

```
swinstall -s /cdrom/CommandViewSDM/hpux/
cvsdm_IA_11_23_v109.depot
```

HP-UX 11.23 PI on PA

```
swinstall -s /cdrom/CommandViewSDM/hpux/
cvsdm_PA_11_23_v109.depot
```

Check the appropriate /cdrom/CommandViewSDM/hpux directory for the complete version name of the depot file.

10 Highlight CMDVIEWSDM from the list, then Mark it for installation from the Action menu. All required Command View components will be marked for installation.

11 Start the installation by selecting Install from the Action menu. Complete the information requested on the swinstall screens.

**Note** The installation process may determine that components required by Command View SDM are aleady installed. In this case, an error message may be displayed, but it can be ignored.

12 Once the software installation is complete, log out, then log back in to reset the path.

13 If you saved the configuration files from any earlier Command View SDM installation, use them to restore the prior configuration. Before restoring the older files, you may want to compare them with newly installed files (some of the old files may be the same).

**Note** Note For installations with multiple IP addresses, see Selecting a Host IP Address on Systems with Multiple IP Addressesî earlier in this chapter.

### What's Next?

- If the software was installed on a host, refer to "Configuring Command View SDM on page 44" for additional configuration information.
- If the software was installed on a client, see "Setting up Remote Client Access on page 44" for information on assigning client access rights.

**Note** Two Command View daemons are installed on the client that are only required on the host. They may be shut down on a client. To shut these daemons down, refer to "Starting/Stopping HostAgent and OpenDIAL on page 48".

## Removing Command View SDM from HP-UX

This procedure describes removing the Command View SDM software. The existing Command View SDM software should be removed before installing a new version of the software. The removal process does not automatically delete the log files. If you want to delete the log files, you will have to do so manually.

1 Log onto the system as root or superuser.

2 If you are upgrading to a newer version of Command View SDM, save any configuration files you may have customized. See "Saving Disk System Configuration Information on page 43".

3 Run `swlist` to identify the software:

```
swlist
```

Identify the Command View software in the list displayed.

4 Remove the HP Command View software using the name obtained in step 3:

```
CMDVIEWSDM
```

**Note** If you may need the contents of the existing log files, do not perform the next step. The log files may be useful in isolating problems you may have been experiencing with the disk system.

5 Remove the log files using the following commands:

```
rm -fR /opt/sanmgr
rm -fR /etc/opt/sanmgr
rm -fR /var/opt/sanmgr
```

## HP-UX System Support Software

In addition to Command View SDM, there are additional HP-UX applications that can be used to manage and diagnose storage devices. These applications either integrate with Command View SDM, or they provide their own management options. These applications include:

- System Administration Manager (SAM)
- Support Tools Manager (STM)
- Off-Line Diagnostic Environment (ODE)

The *HP-UX Support Plus CD-ROM* (September 2001 or later) includes the versions of these applications that support the HP SureStore Virtual Array products.

# Installing Command View SDM on Windows

The following procedure describes the steps involved in installing the Command View SDM software on a Windows 2000/2003 host or client.

## Minimum System Requirements for Windows

Before installing the Command View SDM software, verify that the host meets the following minimum requirements.

| | |
|---|---|
| Host | ■ Administrator privileges (Required)<br>■ Windows 2000 SP4 (32Bit), Windows 2000 AS SP4 (32Bit) and Windows 2003 server Enterprise Edition (32Bit)<br>■ 500 MHz processor speed or better<br>■ 1 GB RAM<br>■ Screen resolution 800 x 600 (for GUI use)<br>(Recommended resolution: 1024 X 768)<br>■ Video support: 64K colors or better<br>■ Disk space:<br>60 Mbytes of permanent space for the application<br>30 Mbytes of temporary space in the Windows Temp directory (typically C:/Temp) used during installation |

### Selecting a Host IP Address on Systems with Multiple IP Addresses

During installations where multiple IP addresses exist on a host (i.e. multiple LAN cards in a single host), only one of the IP address will be entered into the <INSTALLDIR>\hostagent\config\commIpAddr.txt file. If this is not the correct address, the hostagent will not communicate with the array.

After installation, check the contents of the <INSTALLDIR>\hostagent\config\commIpAddr.txt file. If the correct IP address is not shown, manually enter the correct IP address.

## Installation Tips

- For the latest software updates, refer to the README file on the *Command View SDM* CD. The README is located in the corresponding operating system directory.
- When upgrading to a newer version of Command View SDM, always remove the old software and save any configuration files.

## INSTALLATION STEPS FOR CVSDM ON A STAND-ALONE SYSTEM

1. Ensure that previous versions of CVSDM is uninstalled and all other applications are closed before the installation
2. Insert the Command View SDM CD into the CD-ROM drive on the host.
3. If upgrading to a newer version of Command View SDM, save any configuration files and remove the old software.

**Note** While un-installation of the previous version, clicking on the pop-up message can save configuration files.

4. From the Start menu, select Run.
5. Enter the letter of your CD-ROM drive, followed by CommandViewSDM\win\setup.exe. For example, if your CD-ROM drive is "E", enter:

   E:\CommandViewSDM\win\setup.exe
6. Follow the instructions to complete the installation.
7. If you saved the configuration files from any earlier Command View SDM installation, use them to restore the prior configuration. Before restoring the older files, you may want to compare them with newly installed files.

Once the installation is complete, an icon for the Command View SDM Launcher is placed on the desktop.

**Note** For installations with multiple IP addresses, see "Selecting a Host IP Address on Systems with Multiple IP Addresses" earlier in this chapter.

**Note** You have to manually uninstall the previous version of Command View if it exists through Add/Remove Programs, as Command View SDM installer **will not** automatically remove the previous version.

### HP OpenView Storage Area Manager Integration

The Command View SDM software integrates into HP OpenView Storage Area Manager (SAM) running on a Windows management station. The process of installing the software on OpenView SAM is the same as on a standard WIndows environment, however you should be aware of the following operational differences when installing on an OpenView SAM management station:

- The Command View software is only installed on the OpenView SAM management station.
- When installing Command View SDM on an OpenView SAM management station, make sure that SAM is installed before installing Command View SDM.
- The OpenView SAM Host Agent must be installed on servers connected to the disk systems that will be managed.
- When upgrading OpenView SAM, Command View SDM must be uninstalled before performing the upgrade, and then reinstalled when the upgrade is complete.
- The file used to control client access on OpenView SAM is authorizedClients.dat located in the following directory `\sanmgr\managementserver\config\`.
- The Command View HostAgent and OpenDIAL services are not used on an OpenView SAM management station. Instead, the OpenView Storage Management Server service is used for the Command View SDM software.
- OpenView SAM is supported on the following versions of Command View:
  - OVSAM 2.1 is supported with Command View 1.03/1.04
  - OVSAM 2.2 is supported with Command View 1.05 and 1.06
  - OVSAM 3.0 is supported with Command View 1.06
  - OVSAM 3.1 is supported with Command View 1.07
  - OVSAM 3.1/3.2 is supported with Command View 1.08
  - OVSAM 3.2 or greater is supported with Command View 1.09

## Installation Steps

1. Make sure that SAM is installed and that the SAM Host Agent has been installed on the hosts connected to the array. See "Installing the SAM HostAgent on OpenView SAM" below.

2. Insert the *Command View SDM* CD into the CD-ROM drive on the host.
3. If upgrading to a newer version of Command View SDM, save any configuration files and remove the old software. See the following section.
4. From the Start menu, select Run.
5. Enter the letter of your CD-ROM drive, followed by `CommandViewSDM\win\setup.exe`. For example, if your CD-ROM drive is "E", enter:

   ```
   E:\CommandViewSDM\win\setup.exe
   ```

6. Follow the instructions to complete the installation.
7. If you saved the configuration files from any earlier Command View SDM installation, use them to restore the prior configuration. Before restoring the older files, you may want to compare them with newly installed files (some of the old files may be the same).

**Note** For installations with multiple IP addresses, see "Selecting a Host IP Address on Systems with Multiple IP Addresses" earlier in this chapter.


Once the installation is complete, an icon for the Command View SDM Launcher is placed on the desktop.

**Note** You have to manually uninstall the previous version of Command View if it exists through Add/Remove Programs, as Command View SDM installer will not automatically remove the previous version.

**Note** After uninstalling Command View SDM, check to see if HP StorageWorks SMI-S VA is still installed. If it is still installed, you need to uninstall HP StorageWorks SMI-S VA.

## Installing the SAM HostAgent on OpenView SAM

When installing the Command View SDM software in a SAM environment, the SAM Host Agent must be installed on hosts connected to the disk systems that

will be managed. The SAM Host Agent must be installed and running on a host to allow the SAM management client to detect and manage the disk system .

1. Launch the SAM GUI.
2. Select Tools > Manage Host Agent > Install Host Agent Software.

   Refer to the SAM on-line help for more information on installing the host agent.

### What's Next?

- If the software was installed on a host, refer to "Configuring Command View SDM on page 44" for additional configuration information.
- If the software was installed on a client, continue with "Setting Up the Launcher on a Remote Client on page 36".

**Note** Two Command View services are installed on the client that are only required for server operation. They may be shut down on the client. To shut these processes down, refer to "Verifying the Installation on page 47".

## Setting Up the Launcher on a Remote Client

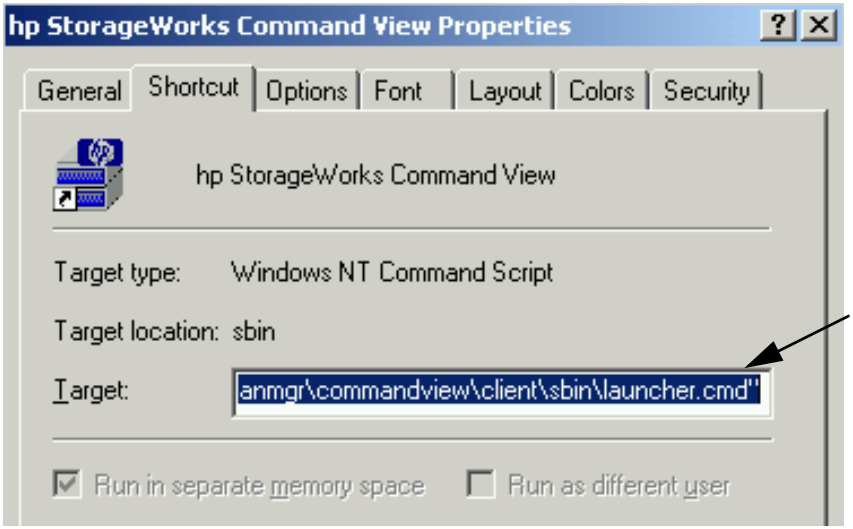
After installing Command View SDM on a client management station, you must identify the host you want the Launcher to connect to. This will be a host running Command View SDM and connected to the disk system you want to manage. The Launcher properties on the client must be modified to identify the desired host.

**Note** It is not necessary to perform this procedure if Command View SDM has been installed on a client being used for Instant Support Enterprise Edition.

1. Right click on the Command View SDM Launcher icon on the client desk top.
2. Select Properties >> Short Cut
3. In the Target: window, append a space and the host identification to the end of the path displayed. The host can be identified by either its DNS

name or IP address. In the following figure, the IP address 10.62.126.238 is added to the target path.

4 Click OK.




Add the IP address or the DNS name of the Command View host



**Note**

- To manage a disk system from a remote client, the client must be granted access by the Command View SDM host the Launcher is connecting to. See "Setting up Remote Client Access on page 44" for more information.

- You can create additional Launcher icons connecting to different Command View SDM hosts by right clicking on the Launcher icon and selecting Create Shortcut. This will create a duplicate of the existing icon, which you can then modify to connect to a different host.

## Removing Command View Software from Windows

This procedure describes removing the Command View software. The existing Command View SDM software should be removed before installing a new version of the software. The removal process does not automatically delete the log files. If you want to delete the log files, you will have to do so manually.

To remove the software:

1. If you are upgrading to a newer version of Command View SDM, save any configuration files you may have customized. See "Saving Disk System Configuration Information on page 43".
2. Select Start >> Settings >> Control Panel >> Add/Remove Programs
3. Select hp command view from the list of applications, and then click Add/Remove....

   Follow the screens to remove Command View.

**Note** If there has been a problem with the software or the disk system, the logs should be retained and used to reference for troubleshooting. If you are certain you will not need to access the logs, they can be removed.

4. To remove the logs files, delete the following folder:

   `\sanmgr\commandview\server\logs`
5. Reboot the system when the software has been removed.

# Installing Command View SDM on Linux Red Hat

The following procedure describes the steps involved in installing the Command View SDM software on a Linux Red Hat.

## Minimum System Requirements for Linux Red Hat

Before installing the Command View SDM software, verify that the host meets the following minimum requirements.

| | |
|---|---|
| Host | ■ RHEL AS 3.0 with Kernel version 2.4.21-9EL (plus patches, see web site mentioned below)<br>■ Intel Pentium PIII/IV 500 MHz processor speed or better<br>■ RAM: 1 GB<br>■ Video Resolution: 800x600 (for GUI) (Recommended 1024 X 768)<br>■ Video Support: 64K colors or better<br>■ Disk Space: 60 Mbyte |

For the most current supported Linux Kernel version and required patches for Command View SDM, refer to the web documents, "Kernel Configuration" and "Linux Tips". These documents and all the latest information can be found in the Using Your Product section of the following HP support web site:

http://www.hp.com/support/cvsdm

### Selecting a Host IP Address on Systems with Multiple IP Addresses

During installations where multiple IP addresses exist on a host (i.e. multiple LAN cards in a single host), only one of the IP address will be entered into the / etc/opt/sanmgr/hostagent/config/commIpAddr.txt file. If this is not the correct address, the hostagent will not communicate with the array.

After installation, check the contents of the `/etc/opt/sanmgr/hostagent/config/commIpAddr.txt` file. If the correct IP address is not shown, manually enter the correct IP address.

### Installation Tips.

- For the latest software updates, refer to the README file on the *HP StorageWorks Command View SDM* CD. The README is located in the corresponding operating system directory.
- When upgrading to a newer version of Command View SDM, always remove the previous version before installing the new software.
- Before installing Command View SDM, verify that the timezone system environmental variable, TZ, is properly set. If the TZ variable is not properly set before installation, the system logs may have inconsistent date stamps. If this should occur, set the TZ variable, then stop and restart HostAgent.
- You have to manually uninstall the previous version of Command View if it exists through Add/Remove Programs, as Command View SDM installer will not automatically remove the previous version.

## Installation Steps

Installation procedures for Command View SDM on Linux Red Hat consists of a set of shell scripts and rpm files that customize and install the necessary software. Prior to installing the software, the Linux Kernel must be updated using the Kernel Configuration document available on the support web site.

1. Log on as root or superuser.
2. If upgrading to a newer version of Command View SDM, remove the old software and save any configuration files. See the following section.
3. Create a directory for the software. For example:

   ```
   mkdir /tmp/cmdview
   ```

4. Insert the Command View SDM software CD into the CD-ROM drive.
5. If necessary mount the CD device file. For example:

   ```
   mount /dev/cdrom /mnt/cdrom
   ```

6. Copy the contents of the CD (or download from the web) into the directory created in step 3. For example:

   ```
   cp /mnt/cdrom/CommandViewSDM/linux/cvsdm_rhel30_v108.tar
   /tmp/cmdview
   ```

7. Change directories to the /linux install directory by entering:

   ```
   cd /tmp/cmdview/
   ```

8. Untar the file by entering:

```
tar -xvf cvsdm_rhel30_v108.tar
```

9 Go to `/tmp/cmdview/SDM` entering:

```
cd /tmp/cmdview/SDM
```

10 Install the software by entering:

```
sh install_cmdview
```

The installation will take several minutes.

**Note** The Host Agent installer writes a log file to `/tmp/SanMgrInstall.log`.

The Command View SDM installer writes a log file to

`/tmp/CommandViewInstall.log`

11 For convenience you may want to add the following line to your path variable:

```
export PATH=$PATH:/opt/sanmgr/commandview/client/sbin
```

12 Log out, then log back in to reset the path.

13 If you saved the configuration files from any earlier Command View SDM installation, use them to restore the original configuration. Before restoring the older files, you may want to compare them with newly installed files (some of the old files may be the same).

**Note** For installations with multiple IP addresses, see “Selecting a Host IP Address on Systems with Multiple IP Addresses” earlier in this chapter.

**Note** After installation, check the contents of /opt/sanmgr/hostagent/ config/commIPAddr.txt file. If the correct IP address is not shown, manually enter the correct IP address and stop and start the HostAgent.

## What’s Next?

- If the software was installed on a host, refer to "Configuring Command View SDM on page 44" for additional configuration information.
- If the software was installed on a client, see "Setting up Remote Client Access on page 44" for information on assigning client access rights.

**Note** Two Command View daemons are installed on the client that are only required on the host. They may be shut down on a client. To shut these daemons down, refer to "Starting/Stopping HostAgent and OpenDIAL on page 48".

## Removing Command View SDM from Linux

This procedure describes removing the HP Command View software. The existing Command View SDM software should be removed before installing a new version of the software. The removal process does not automatically delete the log files. If you want to delete the log files, you will have to do so manually.

**Note** The 1.07 and 1.08 versions of the Linux installer will not correctly remove earlier versions of the Command View software. Previously installed versions on Linux should be uninstalled using the uninstaller for that version of command view. If the 1.07 uninstaller is used, the following steps may be taken to ensure all unnecessary files are removed:

```
rm -fR /opt/sanmgr/hostagent
rm -fR /var/opt/sanmgr/hostagent
rm -fR /etc/opt/sanmgr/hostagent
```

1. If you are upgrading to a newer version of Command View SDM, save any configuration files you may have customized. See "Saving Disk System Configuration Information on page 43".
2. Remove the HP Command View software:

```
uninstall_cmdview
```

**Note** If there has been a problem with the software or the disk system, the logs should be retained and used to reference for troubleshooting. If you are certain you will not need to access the logs, they can be removed.

3. To remove the logs, enter the following three commands:

```
rm -fR /opt/sanmgr
rm -fR /etc/opt/sanmgr
rm -fR /var/opt/sanmgr
```

If you are re-installing HP Command View software, perform the installation procedures described under "Installing Command View SDM on Linux Red Hat on page 39".

# Saving Disk System Configuration Information

Several configuration files are used to customize the operation of Command View SDM. Because these files allow you to easily replicate or restore the configuration of your disk system, it is recommended that you maintain copies of these files. This is particularly important if you plan to upgrade to a newer version of Command View SDM. After the new software has been installed, these files can be copied into the newly installed files to recreate the desired operating configuration.

**Note** To prevent the configuration files from being deleted when you remove the existing Command View SDM software to upgrade to a newer version, make sure the copies are in a location outside the HP Command View installation path.

There are three configuration files that should be saved:

### HP-UX and Linux

`/opt/sanmgr/commandview/server/config/`**PanConfigParams.txt**
`/opt/sanmgr/commandview/server/config/`**ContactInfo.txt**
`/opt/sanmgr/hostagent/config/`**access.dat**

### Windows

`\sanmgr\commandview\server\config\`**PanConfigParams.txt**
`\sanmgr\commandview\server\config\`**ContactInfo.txt**
`\sanmgr\hostagent\config\`**access.dat**

### Windows - HP OpenView Storage Area Manager

`\sanmgr\commandview\server\config\`**PanConfigParams.txt**
`\sanmgr\commandview\server\config\`**ContactInfo.txt**
`\sanmgr\managementserver\config\`**authorizedClients.dat**

In addition, if you have downloaded any firmware update files stored within the Command View installation path, and would like to save them, copy them to a temporary directory and restore after installation.

# Configuring Command View SDM

Once installed, it may be necessary to configure the operation of Command View SDM. Configuration is required to perform the following tasks:

- Setting up remote client access
- Configuring the Command View SDM web browser
- Enabling EMS if necessary (HP-UX only)

## Setting up Remote Client Access

When using a remote client to manage disk systems, the client must be granted access rights by the Command View SDM host connected to the disk system. This includes both clients running Command View SDM, and web browser clients. Access rights are managed using a special access file which is maintained on the Command View SDM host. This file contains the IP addresses of clients that are allowed to manage any disk system connected to the host.

The following files are used to control client access:

- `access.dat` - standard installation
- `authorizedClients.dat` - HP OpenView Storage Area Manager (SAM) installation

**Note** By default the configuration file contains a value of "127.0.0.1". This localhost entry is required for Command View host operation and must remain in the file.

1. On the Command View SDM host connected to the disk system, open the configuration file in a text editor. The file is located in the following directory:

   **HP-UX and Linux:** `/opt/sanmgr/hostagent/config/`
   **Windows:** `\sanmgr\hostagent\config\`
   **HP OpenView SAM:** `\sanmgr\managementserver\config\`

2. Add the IP address for each client requiring access to the disk systems connected to the host. Single client IP addresses can be added, or a range of IP addresses can be added using the wild card "*". For example; 10.62.128.* grants access to any client on subnet 128. The use of

wildcards is recommended when connecting from clients configured for dynamic host configuration protocol (DHCP).

3 Save the configuration file.

### Removing a Client

Use the above procedure to remove a host you no longer want to have access. When removing clients it is necessary to stop and restart the HostAgent to implement the change. See "Starting/Stopping HostAgent and OpenDIAL on page 48".

## Configuring the Command View SDM Web Server

The Command View SDM software includes its own web server, which is installed along with the other software components. By default, the web server is enabled on port 4096. If you need to change its port, you can do so using the following procedure.

### Changing the Web Server Port

By default, the Command View SDM web server listens for http requests on port 4096. If this port is not available on your system, you can specify a different port. The port is specified in the following parameter in the configuration file ..\sanmgr\commandview\server\browser\conf.xml:

```
<Set name="Port">4096</Set>
```

Change the value to an available port number.

### Restarting the HostAgent Service

After making changes to the configuration `PanConfigParams.txt` file, you must stop and restart the HostAgent service on the server. For information on performing this operation, refer to "Starting/Stopping HostAgent and OpenDIAL on page 48".

**Note** **HP OpenView SAM Implementation**
On HP OpenView SAM you must stop and restart the HP OpenView Storage Management Server service, not HostAgent. This is done from the Services dialog accessed from the Control Panel.

## Enabling EMS Monitoring

If EMS monitoring is running on the HP-UX host when Command View SDM is installed, the disk system(s) will be automatically configured into event monitoring. In this situation the following steps do not need to be performed.

If EMS monitoring is installed on the host after Command View SDM, it will be necessary to manually enable event monitoring for the disk system. To do so, perform the following steps:

1. On an HP-UX host, perform the following steps. If the host is not running HP-UX, go to step 2.
   a. Open the following file in a text editor:

      `/var/stm/config/tools/monitor/RemoteMonitor.cfg`

   b. Edit the entry for `JBOD` to read as follows:

      `JBOD ENABLE`

   c. Save the file.
2. Open the following file in a text editor:

   `/opt/sanmgr/commandview/server/config/PanConfigParams.txt`
3. Edit the following entry to read as follows:

   `EMS_HOST=`*`hostname`*

   *`hostname`* is the name of the host running EMS
4. Save the file.

# Verifying the Installation

You can easily verify the success of the Command View SDM software installation using the following steps.

1. From a command line on the host or client on which you have installed the software, enter the following command:

   ```
   JBODdsp -i <hostname>
   ```

   *<hostname>* identifies the remote host for which information will be displayed, and is required only when running the command on a client.

2. View the output displayed. It should include an entry similar to the following for each disk system connected to the host.

   ```
   Product: HP-A6255A
   Device Type: Enclosure Controller
   Device Path: \\.\scsi3.0.15.0
   Alias: blue
   Unique ID:HPA6255AR1AHL1224345
   Serial Number:R1AHL1224345
   Device Host: netsvr.boi.hp.com
   ```

**Note** If the anticipated output is not displayed, a problem may have occurred during installation. See "Solving Problems on page 99" for help in isolating and solving the problem.

# Starting/Stopping HostAgent and OpenDIAL

The HostAgent and OpenDIAL services (or daemons) are installed with Command View SDM. These services are started automatically during installation and any time the host is restarted. Both services must be running on the host for Command View SDM to operate. If these services are not running, they must be started manually. HostAgent and OpenDIAL are not needed on a remote Command View SDM client and can be stopped.

To start or stop HostAgent and OpenDIAL you must login as root or superuser (for HP-UX/Linux) or have Administrator Privileges (for Windows).

## HP-UX and Linux

- To stop HostAgent and OpenDIAL, enter the following command:

  ```
  /opt/sanmgr/hostagent/sbin/HA_Dial_Stop
  ```

- To start HostAgent and OpenDIAL, enter the following command:

  ```
  /opt/sanmgr/hostagent/sbin/HA_Dial_Start
  ```

## Windows 2000 and Windows 2003 server

**Note** If Command View SDM is installed on an HP OpenView SAM management station, the HostAgent and OpenDial services are not used. The HP OpenView Storage Management Server service is used to integrate the Command View software with Storage Area Manager. This is the service you must stop/start in this environment.

Although it is possible to start or stop HostAgent and OpenDIAL from the Services dialog, it is recommended that you use the script files described below. This will ensure that the services are stopped and started in the proper order.

- To stop HostAgent and OpenDIAL, enter the following command:

  ```
  <drive>:\Program Files\Hewlett-Packard\sanmgr\command-
  view\client\sbin\HA_Dial_Stop
  ```

- To start HostAgent and OpenDIAL, enter the following command:

  ```
  <drive>:\Program Files\Hewlett-Packard\sanmgr\command-
  view\client\sbin\HA_Dial_Start
  ```

# Details About the Command View SDM Installation Process

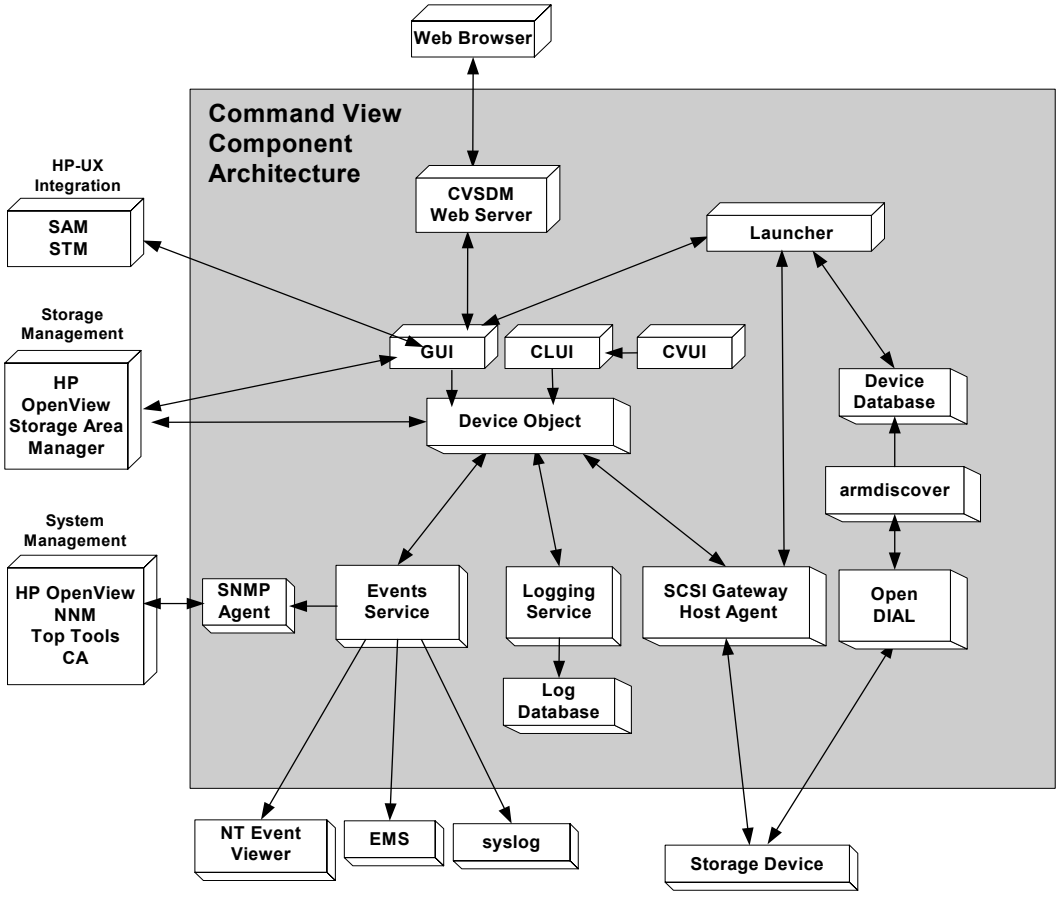
This section describes in more detail the Command View SDM installation process. It is not essential that you read this material to install the software successfully. It is provided for those who have a desire to understand what is going on behind the scenes. It may also help you solve any problems that occur during the installation.

## Command View Architecture

Understanding the architecture of the Command View SDM software components should help you understand the installation and interaction of the various components.

The major components is the Command View SDM software are shown in Figure 4. The integration with other components is also shown.

**Figure 4** Command View SDM Architecture



## The Installation Process

The following steps identify the main tasks performed during the installation of the software.

1. The installer creates the directory structure on the host and copies the Command View SDM files to the appropriate folders.
2. The OpenDIAL and HostAgent services start, which in turn launch the server components - SCSI Gateway, Logging Service, etc.
3. The `armdiscover` process is initiated, which causes OpenDIAL to do a discovery of all disk systems connected to the host.
4. The results of the discovery are stored in the device database files used by other components. The contents of the database files are used to populate the Launcher, and are returned in response to an `JBODdsp -i` command.
5. When all disk systems are discovered, the logging service is enabled and it begins collecting log entries for the discovered disk systems.
6. When the Launcher is run, it retrieves device information from the device data to determine what disk systems are connected. The Launcher then accesses each disk system to determine its status and displays the appropriate icon for each disk system.

## File Directory Structure

During the installation a directory structure is created on the host for the Command View SDM files. The main directory structure is listed below.

### HP-UX and Linux Directories

The following directories are created when installing Command View SDM on an HP-UX or Linux host. Files are split between /opt/sanmgr, /etc/opt/sanmgr, and /var/opt/sanmgr

```
/opt/sanmgr
/opt/sanmgr/jre/bin
/opt/sanmgr/jre/lib
/opt/sanmgr/hostagent/sbin
/opt/sanmgr/hostagent/config > /etc/opt/sanmgr/hostagent/
config
/opt/sanmgr/hostagent/data > /var/opt/sanmgr/hostagent/
data
/opt/sanmgr/hostagent/log > /var/opt/sanmgr/hostagent/log
/opt/sanmgr/commandview/client/config
```

```
/opt/sanmgr/commandview/client/sbin
/opt/sanmgr/commandview/server/config > /etc/opt/sanmgr/
commandview/server/config
/opt/sanmgr/commandview/server/data > /var/opt/sanmgr/
commandview/server/data
/opt/sanmgr/commandview/server/logs > /var/opt/sanmgr/
commandview/server/logs
/opt/sanmgr/SMI-S/VAProvider/classes
/opt/sanmgr/SMI-S/VAProvider/mof
/opt/SMI-S/cimom/classes
/opt/SMI-S/cimom/mof
```

## Windows Directories

The following directories are created when installing Command View SDM on a Windows host. Note that some directories differ when installing on an HP OpenView Storage Area Manager host.

```
\Program Files\Hewlett-Packard\sanmgr
\Program Files\Hewlett-Packard\sanmgr\jre\bin
\Program Files\Hewlett-Packard\sanmgr\jre\lib
\Program Files\Hewlett-Packard\sanmgr\commandview\client\config
\Program Files\Hewlett-Packard\sanmgr\commandview\client\sbin
\Program Files\Hewlett-Packard\sanmgr\commandview\server\config
\Program Files\Hewlett-Packard\sanmgr\commandview\server\data
\Program Files\Hewlett-Packard\sanmgr\commandview\server\logs
\ProgramFiles\HewlettPackard\SMI-S\cimom\classes
\ProgramFiles\HewlettPackard\SMI-S\cimom\mof
\ProgramFiles\HewlettPackard\sanmgr\SMI-S\VAProvider\classes
\ProgramFiles\HewlettPackard\sanmgr\SMI-S\VAProvider\mof
```

### Standard Install with HostAgent and OpenDIAL

```
\Program Files\Hewlett-Packard\sanmgr\hostagent\sbin
\Program Files\Hewlett-Packard\sanmgr\hostagent\config
\Program Files\Hewlett-Packard\sanmgr\hostagent\data
\Program Files\Hewlett-Packard\sanmgr\hostagent\log
```

### Install with HP OpenView Storage Area Manager (SAM)

```
\Program Files\Hewlett-Packard\sanmgr\managementserver\sbin
\Program Files\Hewlett-Packard\sanmgr\managementserver\config
\Program Files\Hewlett-Packard\sanmgr\managementserver\data
\Program Files\Hewlett-Packard\sanmgr\managementserver\logs
```

# HP StorageWorks SMI-S VA (Storage Management Initiative Specification)

## Introduction

HP StorageWorks SMI-S VA provides the Web-Based Enterprise Management (WBEM) interface for the management of HP StorageWorks VA arrays. SMI-S VA uses the Storage Management Initiative Specification (SMI-S), which is a new standard developed by the Storage Networking Industry Association (SNIA).

SMI-S VA is a component of Command View SDM and resides on the host to which the arrays are connected in the SAN. It runs as a service daemon. To start and stop SMI-S VA, see "Starting and Stopping SMI-S VA on page 55".

This section describes procedures for configuring and installing SMI-S VA for HP StorageWorks Command View SDM.

## SMI-S VA Features

The following features are provided by SMI-S VA:

- Profile
  - Array
    - Access Point
    - Backend Port
    - Cluster
    - Copy Services
    - Location
    - LUN Creation
    - LUN Masking and Mapping
    - Pool Manipulation, Capabilities and Settings
    - Software
  - Server
- Indications - Event Capabilities
  - Alert indications
  - Lifecyle indications

- Other features
  - Service Location Protocol (SLP) discovery
  - Java Authentication and Authorization Service (JAAS)
  - Secure Sockets Layer (SSL)

## Supported Operating Systems

SMI-S VA 1.09 is supported on all the operating systems that support Command View SDM 1.09. See "Operating System Support (Native) on page 22" for more information.

## Installing SMI-S VA

HP StorageWorks SMI-S VA is automatically installed when the HP StorageWorks Command View SDM software is installed.

### Prerequisites

Ensure that the SLP daemon is running on the management host. See “"SLP DAEMON Installer on page 62".

## Verifying SMI-S VA Installation

To verify the SMI-S VA installation, complete the following steps:

### Windows

- Verify that the `HP StorageWorks SMI-S CIMOM` service is displayed.
- Verify that the VAProvider.jar file is present in the following directory:

  `C:\Program Files\Hewlett-Packard\sanmgr\SMI-S\VAProvider\classes\VAProvider.jar`.

### HP-UX

- Verify that the following SMI-S VA components are displayed within CMDVIEWSDM in the SD Remove interface:
  - SMI-S_VA
  - cimom

### Linux

- Execute the `rpm -qa |grep SMI-S` command on the destination machine to view the following SMI-S VA packages:
  - SMI-S_VA-1.09.00-1
  - SMI-S_CIMOM-1.0.2-1

**Note** The CIMOM, by default, runs in the SSL mode on port 5989. When SSL is disabled, the CIMOM runs on port 5988.

## Starting and Stopping SMI-S VA

### Windows

The display name of the service is `HP StorageWorks SMI-S CIMOM` (the service name is `hpSMISCIMOM`). The service is automatically installed and started after installation.

To start or stop SMI-S VA on Windows 2000 or Windows Server 2003:

1. Click **Control Panel**.
2. Click **Administrative Tools**.
3. Click **Services**.
4. Select `HP StorageWorks SMI-S CIMOM` and click **Start** to start the service or click **Stop** to stop the service.

**Note** On a Windows NT machine, click **Services** from the Control Panel and follow step 4.

### HP-UX and Linux

The name of the SMI-S VA daemon is `hpSMISCIMOM`. The daemon can be started by running the script `SMIS_trigger` located in the `/opt/SMI-S/cimom/` directory with the start option.

```
$./SMIS_trigger start
```

The `SMIS_trigger` also supports restarting of the service.

```
$./SMIS_trigger restart
```

The daemon can be stopped by running the `SMIS_trigger` script with the stop option.

```
$./SMIS_trigger stop
```

**Note** These commands can be used only by the `root` user.

## Uninstalling SMI-S VA

HP StorageWorks SMI-S VA is automatically uninstalled when the HP StorageWorks Command View SDM software is uninstalled.

## Configuring SMI-S VA

SMI-S VA is automatically installed when you install CV SDM. The following post-installation procedure must be completed prior to using SMI-S VA.

Modify the configuration files as indicated in Table 1.

**Table 3** Configuration files

| File | Description |
|---|---|
| `VAProvider.params` | Configures the provider. |
| `VA.provider` | Configures the authorization modules and audit logging features. |
| `cim.properties` | Conifgures the CIMOM-related parameters for enabling SSL, JAAS, and so on. |
| `JAAS.policy` | Configures an Access Control List (ACL). |
| `slp.conf` | Ensures that the Service Agent registers with the Directory Agent. |

Connect through the Windows Terminal Services to edit the configuration files. After editing the configuration parameters, restart the hpSMISCIMOM service.

## The VAProvider.params File

The `VAProvider.params` file is located in the following directory for a Windows machine:

```
<DriveLetter:\>Program Files\Hewlett-Packard\sanmgr\SMI-S\VAProvider\VAProvider.params
```

The `VAProvider.params` file is located in the following directory for an HP-UX or Linux machine:

`/opt/sanmgr/SMI-S/VAProvider/VAProvider.params`

Configure the values of the editable parameters as described in Table 4 before managing the VA using HP StorageWorks SMI-S VA. Restart the `hpSMISCIMOM` service after you modify the configuration parameters.

**Table 4** Parameters in the VAProvider.params file

| Field | Purpose | Modifiable |
|---|---|---|
| Provider Class | VA Provider class Name | No |
| Host | IP address of the management host to contact for the array data (default value for the host parameter is 127.0.0.1, which is the localhost). | Yes |
| Event Periodicity | Specifies the periodicity of the event capturing. | Yes |
| Debug | By default it is false. If true, it writes log information to the file. (Passive Management data such as details of CIM instance creation and deletion).<br>The log file is `DefaultDebug.log`.<br>Location on Windows:<br>`<Drive Letter:\>Program Files\Hewlett-Packard\SMI-S\cimom`.<br>Location on HP-UX and Linux:<br>`/opt/SMI-S/cimom`. | Yes |
| NameSpace | Currently, only `root/va` namespace is supported. | No |
| Methodlog | If "On", method logging is enabled. If "Off," method logging is disabled. This parameter is not present in the file by default.<br>`<Installation Directory>\HPVAMethodLog.log` (Active management data status of method providers by displaying Name of method invoked, Time it was invoked, Status in terms of Success or Failure along with description). | No |

## The VA.provider File

Modify the parameters in the VA.provider file as indicated in Table 5.

**Table 5** Parameters in the VA.provider file

| Parameters | Description |
|---|---|
| AUTHORIZATION_MODULE | Specifies the authorization mechanism to be used. The value is the class name of the authorization module. The CIMOM supports the following authorization modules:<br>• BasicAuthorization<br>• JAASAuthorization<br>The default module is JAASAuthorization. |
| AUDIT_LOGGER | Specifies the class name of the location of the Audit Log implementation. The default implementation is AuditLogSMIS. The class name must implement the com.hp.utlis.AuditLog interface present in the CIMOM. |
| AUDIT_LOG_FILENAME | Specifies the file name to record audit log information. The default file name is va_audit.log. It is located in the CIMOM directory. |
| NameSpace | Specifies the namespace supported by the provider. The default value is root/va. |

# The cim.properties File

Modify the parameters in the `cim.properties` file as indicated in Table 6.

**Table 6** Parameters in the cim.properties file

| Field | Purpose |
|---|---|
| `EnableSSL` | Set to `True` to enable SSL. The default value is `True`. |
| `LogResponseSeparate` | Set to `True` to separate requests and response packets. |
| `LogFilesCount` | Indicates the number of log files maintained by `CIMOM`. The default number is 5. Modify this number to increase or decrease the number of log files. When you initiate the `CIMOM`, it starts logging to the `<serverDebugFile>+0` file. (The `serverDebugFile` is specified in the `cim.properties` file).<br>When the file size reaches the specified threshold (`MaxLogFileSize`), the `CIMOM` starts logging into the next file in the sequence in the ascending order and overwrites the last modified file. |
| `MaxLogFileSize` | Maximum size of each log file in bytes. 15 MB is the default size of each log file. You can modify this number. When a log file reaches the specified threshold, the `CIMOM` starts logging in to the next log file. |
| `Min_Memory_Usage` | To set the minimum Java heap size for the `CIMOM` server. The default value is 20 MB. |
| `Max_Memory_Usage` | To set the maximum Java heap sezie for the `CIMOM` server. The default value is 119 MB. |

The parameters `LogResponseSeparate`, `LogFilesCount`, and `MaxLogFileSize` are not visible when you open the `cim.properties` file for the first time. These parameters are visible only when you change the values of these parameters. To change the values of these parameters, use the following format:

```
ParameterName=Value
```

However, if you re-install SMI-S VA 1.09, the values of all parameters revert to the default value.

**Note** Do not modify any parameter that is not listed in the table.

## The UserAccountsManager.bat file

User accounts are organized into groups, and a set of permissions are assigned to each group using JAAS. To manage the user accounts, you must have super user privileges. Use the script file (`UserAccountsManager.bat`) located in the `home` directory. This is the directory where the CIM Object Manager is installed. `UserAccountsManager.bat` file is titled `UserAccountsManager.sh` in HP-UX and Linux.

In Windows, the script file is located in the following directory:

```
C:\Program Files\Hewlett-Packard\SMI-S\cimom.
```

In HP-UX and Linux, the script file is located in the following directory:

```
/opt/SMI-S/cimom
```

To find the list of switch options supported, run this script file with the -h option.

**To list the available groups and users, execute this command:**

```
$ UserAccountsManager -LG
```

**Note** The -LG parameter is the only input you can use to list the available groups and users. Currently the available groups are Administrator and User. There are no commands to add or remove the groups. User accounts in the *Administrator* group have complete control of all operations. User accounts in the *User* group can only execute read-only operations.

**To add a user, execute this command:**

```
$ UserAccountsManager -AU -G <Group> -U <UserName> -P
<Password>
```

where:

- `G` is the group name for the user.
- `U` is the user name.
- `P` is password for the user.

Example:

```
$ UserAccountsManager -AU -G Administrator -U Tom -P
Vanilla2
```

**Note** The parameter *Group* is one of the groups listed by the `-LG` option. A user name can exist in only one group.

**To change the user password, execute this command:**

```
$ UserAccountsManager -CP -U <UserName> -O <OldPassword> -
N <NewPassword>
```

where:

- `U` is the user name.
- `O` is the old password of the user.
- `N` is the new password for the user.

Example:

```
$ UserAccountsManager -CP -U Tom -O Vanilla2 -N Chocolate3
```

**To remove a user, execute this command:**

```
$ UserAccountsManager -DU -U <UserName>
```

where:

- `U` is the user name.

Example:

```
$ UserAccountsManager -DU -U Tom
```

**For help, execute this command:**

```
$ UserAccountsManager -h
```

where:

- `h` is help.

## SLP Configuration

Configure the `slp.conf` attributes if the Service Agent (SA) has to be registered with the Directory Agent (DA). OpenSLP, by default, starts in the SA mode. The `slp.conf` file is located in `C:\winnt\slp.conf` in Windows and `/etc/slp.conf` in HP-UX and Linux. Complete the following step to configure the `slp.conf` attributes:

Set the value of `net.slp.passiveDADetection` and `net.slp.activeDADetection` to `True`.

## SLP DAEMON Installer

The SMI-S server supports Service Location Protocol Daemon (SLP) discovery and it is mandatory to have the "slpd" (SLP daemon) running on the management host. The SLPD binaries are located on the Web and on the Command View SDM CD.

**Note** After you install the SLP Daemon, a service titled Service Location Protocol is created in the machine.

## SLP Binaries Location on the Web and CD

### HP-UX

#### HP-UX Binaries Location on the Web

www.software.hp.com

#### HP-UX 11.11 Binaries Location on the CD

The HP-UX 11.11 slpd binaries are located on Web and Command View CD as follows:

CD:

```
/CD Root/
|SMI-S/
        |slpd/
              |hpux/
                    |slpd-11.11.depot
```

#### HP-UX 11.23 Binaries Location on the CD

For HP-UX 11.23, `slpd` is bundled with the operating system.

### Linux

#### Linux Red Hat Binaries Location on the Web

http://www.openslp.org/download.html (openslp-1.0.11-1.i386.rpm)

#### Red Hat Linux 7.1 and Red Hat Linux Advanced Server 2.1 Binaries Location on the CD

The Linux `slpd` binaries are located on the Web and the Command View SDM CD in the following locations:

CD:

```
/CD Root/
|SMI-S/
        |slpd/
              |linux/
                    |slpd.rpm
```

### Windows

#### Windows Binaries Location on the CD

The Windows slpd binaries are located in the following location on the Command View SDM CD:

```
/CD Root/slpd/windows/setup.exe
```

## Managing Passwords for VA LUN Security/ LUN Masking Access

The VA provides the capability to password-protect access to the LUN security management interface. The password is entered when the system is configured and is maintained within the array.

Use the `LunMasking Password` utility to access a password-protected LUN through the SMI-S interface. The password is stored in an encrypted form on the management host. The management host is the system where `hpSMISCIMOM` runs as a service and is used to establish all SMI-S management sessions. If you change the password, you must change it in the array. Use the `LunMasking Password` utility to re-enter the new password.

### Location of the utility:

#### HP-UX/ Linux

```
/opt/SMI-S/cimom/VA_LunMasking_PasswdUtility.sh
```

#### Windows

```
<DriveLetter:\>Program Files\Hewlett-Packard\SMI-
S\cimom\VA_LunMasking_PasswdUtility.bat
```

The LunMasking password utility supports the following options:

1. **Add**—Add a new password for the array.
2. **Delete**—Delete a password for the array.

3 **Modify**—Modify a password for the array.

4 **List**—View all passwords in decrypted form with array World Wide Names (WWNs) in the following format:

```
Array WWN          :     Passwd
-----------  -----     ------
50060B00000921AB:     guestpassword
```

5 **Exit**—Exit the password utility.

Enter the number of the desired option to perform the operation. The SMI-S VA interface allows you to view and modify LUN Security or LUN Masking data for all the arrays that has a password entry on the management station. You can add or modify the data on the arrays. You do not need to restart the `hpSMISCIMOM` service after modifications.

## Configuring Alert Indications

Contact HP support to configure alert indications for SMI-S VA.

## Configuring Lifecycle Indications

All `CIM_InstCreation`, `CIM_InstDeletion and CIM_InstModification` information is available to `CIM` clients through lifecycle indications. These indications provide information to clients on addition, deletion or modification of pre-defined `CIM` classes through SQL queries. Instance creation, deletion and modification are supported in the following classes:

- CIM_ComputerSystem (Top-Level and StorageProcessorSystem)
- CIM_DiskDrive

Instance creation and deletion is supported for the following class:

- CIM_StorageVolume

Instance modification is not supported for `CIM_StorageVolume`.

Indications are not supported for `CIM_StorageSynchronized` and the LUN Masking and Mapping sub profile.

**Note** Instance modification refers to a change in status.

## SSL Support

By default, SSL is enabled in the provider. SMI-S VA uses an SSL server-side certificate to help clients securely communicate with the SMI-S server. A self-signed certificate (`hpSMIS.cert`) is packaged with SMI-S VA.

Following is the location of the certificate on different operating systems:

**Windows**

```
C:\Program Files\Hewlett-Packard\SMI-S\cimom
```

**HP-UX and Linux**

```
/opt/SMI-S/cimom
```

The certificate can be replaced with a different certificate by the administrator. Be sure to retain the certificate name (`hpSMIS.cert`). To use the certificate, copy it to the trust store from the current location.

A trust store is a repository of trusted certificates that are recognized by the client program. Once the SMI-S certificate is "trusted" by a client program, the client communicates with the SMI-S server using SSL. SSL helps secure the client server communication by providing clients with the ability to authenticate the entity claiming to be the SMI-S server, and also by protecting the integrity of the transmitted data.

## Port Occupation

The `CIMOM`, by default, is SSL enabled and runs on port 5989. When SSL is disabled, the `CIMOM` runs on port 5988. To determine the port number on which the `CIMOM` is running, check the `cimom.startup` file in the `CIMOM` directory. If these ports are not available, the `CIMOM` uses the first available private port starting from 49152.

## Enabling SSL

Enable SSL by setting the `EnableSSL` property in the `cim.properties` file to `True`. See "SSL Support on page 65" for location of the `cim.properties` file on different operating systems.

Once `EnableSSL` is set to `True`, all client connections use the `https` protocol.

If the client is implemented using Java, complete the following procedure to issue the certificate:

1. Import the server certificate into the client trust store. To import the server certificate, complete the following steps:
   - Copy the server certificate to the client system.
   - Use the Java keytool to import the certificate into the client trust store.

     ```
     $ keytool -import -alias hpsmis -file hpSMIS.cert
     -keystore mytruststore
     ```
2. You are prompted to enter a password.

**Note** This password is required for modifying `mytruststore` in the future. If a trust store does not currently exist, the keytool creates the trust store and then imports the specified certificate.

3. To specify a trust store, execute the following command in the client application command line:

   ```
   -Djavax.net.ssl.trustStore
   ```

   Example:

   ```
   $ java -Djavax.net.ssl.trustStore=mytruststore <MyClient>
   <system> root/cimv2 <cimomport> ssl
   ```
4. If the client application is written to update the `truststore` file programmatically, you must type the password (the one used to create the trust store):

   ```
   -Djavax.net.ssl.trustStorePassword
   ```

   Example:

   ```
   $ java -Djavax.net.ssl.trustStore=mytruststore    -
   Djavax.net.ssl.trustStorePassword=wbem01 <MyClient>
   <system> root/cimv2 <cimomport> ssl
   ```

**Note** See "Port Occupation on page 65" for more information.

## Viewing Certificates Using the Keytool Command

To view certificates in a certificate file, execute the following keytool command:

```
$keytool -printcert -file hpSMIS.cert
```

## Viewing All Certificates Using the Keytool Command

To view all the certificates in a `truststore`, execute the following keytool command:

```
$keytool -list -v -keystore mytruststore
```

## Troubleshooting

Table 7 lists the common problems that you may face with SMI-S VA

**Table 7** Troubleshooting

| Problem | Solution |
|---|---|
| The server did not respond to the CIM requests and the CIM Clients receive "CIM_ERR_FAILED" exception. | Determine if the `hpSMISCIMOM` Service/daemon is running. If not, start the service.<br>Determine if the TCP/IP Protocol stack is properly installed on the host. To check, ping localhost. If the ping fails, reinstall the TCP/IP Stack.<br>Determine if TCP port is used by another process. If the CIMOM is in SSL mode, check the 5989 port or if CIMOM is SSL disabled, check the 5988 port. If these ports are is use, the server binds itself to the next available port. So the client must try connecting to the next available port number, usually 49152. On an HP-UX machine, port numbers 49152 to 49157 are occupied by other processes. So the next available port is 49158.<br>Determine the port number in the `cimom.startup` file in the `cimom` directory. |
| The CIM calls are raising NullPointerException. | Check the available disk space on the drive where CIMOM server is installed. If it is full, clean up the disk to make more free space available. If the disk is not full, this indicates that the problem is with the CIM call. Determine if the parameters are valid. |
| The CIM query did not return any instances even when the host pointed by the parameter Host in the `VAproviders.hpcfg` configuration file had virtual arrays connected to it. | Determine if the `HP OpenView SAM Hostagent` service is running on the host machine to which the arrays are connected. If the service is not running, start the `HP OpenView SAM Hostagent` service and then restart the `hpSMISCIMOM` service. |

**Table 7** Troubleshooting

| Problem | Solution |
|---|---|
| SMI-S VA Service failed to start | Check the service registration.<br>Check the event log details. |
| SMI-S VA is not able to populate data. | Check to see if the directory<br>`C:\ProgramFiles\Hewlett-Packard\SMI-S\cimom\persistence\classes\root\VA` is empty. If the directory is empty, load the mofs by invoking the batch file `LoadMofs.bat` present in `<sanmgr>\SMI-S\VAProvider` from the cimom directory. For example:<br>`C:\...\cimom> <sanmgr>\SMI-S\VAProvider\LoadMofs.bat` |
| SMI-S VA failed to fetch data. | Check if the HP OpenView SAM Hostagent service is running in the windows services window.<br>HP OpenView SAM Hostagent needs to be running. If it is not running, select the service and click Start. |

# Graphical User Interface

3

The Command View SDM Graphical User Interface (GUI) provides a convenient and familiar interface for managing the disk system. Using the GUI you can perform most of the tasks involved in the normal day-to-day operation and management of the disk system. For tasks not available in the GUI, the CLUI should be used.

This chapter describes how to start the GUI and use it to perform common management tasks.

## The GUI Components

The GUI comprises two components:

- **Launcher** - displays all the disk systems connected to the host. The Launcher builds the display based on information stored in device database files on the host. The Launcher accesses each disk system to determine its status, which is also displayed. Double clicking on a disk system icon runs the management GUI for that disk system.
- **Management GUI** - the interface from which you perform direct management of a specific disk system. Multiple instances of the GUI can be running on the host, allowing you to manage multiple disk systems simultaneously.

# Running the Command View GUI

There are several methods for running the Command View SDM GUI, each of which is described here.

**Note**

**Accessing the disk system from a remote client requires the proper access!**
Regardless of the method you use to start the GUI, a remote client will need the proper access rights to manage a disk system. See "Setting up Remote Client Access on page 44" for more information.

**Watch Your Case!**
On an HP-UX system, case is important. The Launcher and cmdviewDS must be entered with an upper case L and DS, respectively. For example:

```
http://<hostname>:4096/Launcher.html
http://<hostname>:4096/cmdviewDS.html?<hostname>:<device-id>
```

## Running the Launcher from the Windows Icon


During installation on a Windows host, a Command View Launcher icon is placed on the desktop. You can start the GUI from this icon.

1. Double click the Launcher icon.

   The Command View Launcher window opens displaying an icon for each disk system connected to the host. The icon indicates the current disk system status.

2. Double click on a disk system icon to run the management GUI for the disk system. You can now begin managing the disk system.

## Running the Launcher Using a Command Line

On HP-UX and Linux systems, the Launcher is run from the command line.

1 Start the Launcher by entering:

`launcher` **<<From the local host**

`launcher <hostname>` **<<From a remote client**

`<hostname>` is the name of the host to which the disk system is connected

**Note** If the host cannot find the Launcher, add the path to the command as follows:

**HP-UX or Linux**
`/opt/sanmgr/commandview/client/sbin/launcher <hostname>`

**Windows**
`<drive>:\Program Files\Hewlett-Packard\sanmgr\command-view\client\sbin\launcher <hostname>`

2 To start the management GUI, double click on any disk system icon displayed in the Launcher window.

## Running the Management GUI Directly from a Command Line

If you choose, you can bypass the Launcher and run the management GUI for a specific disk system. You must know the ID of the disk system you want to manage to use this technique. To run the GUI directly from a command line, enter the following command:

`cmdviewDS <device-id>` **<<From the local host**

`cmdviewDS <hostname:><device-id>` **<<From a remote client**

`<hostname>` is the name of the host to which the disk system is connected.

`<device-id>` is the disk system's alias, serial number, device file, or world wide name.

## Running the Launcher from a Web Browser

The Command View Launcher and management GUI can be run from a web browser. This provides a convenient method of managing a disk system from a remote client that does not have the Command View SDM software installed.

**Note** Earlier versions of Command View SDM (1.0 and 1.01) required the installation of a certificate on the browser client for security. Later versions of Command View SDM (1.02 and later) no longer require the installation of the certificate. The applets are now authenticated with built-in certificates.

1. Open a browser on the client.
2. Type the following URL into the address field in the browser:

   `http://<hostname>:4096/Launcher.html`

   `<hostname>` is the name of the Command View SDM host to which the disk system is connected.

**Note** The Sun Java 1.4.2 plug-in is required to run Command View SDM on all supported operating systems. If this component is not installed, you will be prompted to install it at this point. Follow the instructions to install the Java plug-in, and then continue with the next step.

On an HP-UX host you will need to go to the following web site to get the necessary Java plug-in components:

http://www.hp.com/products1/unix/java

3. If the Java Plug-in Security Warning is displayed, select Grant Always to avoid having the warning displayed again. If you select Grant This Session, the message is displayed for each signed jar file that is initially loaded in this session.
4. When the Launcher window is displayed, double-click a disk system icon to start the management GUI.

## Running the Management GUI Directly from a Web Browser

If you know the ID of the specific disk system you want to manage, you can run the management GUI directly from the browser.

1. Open a browser on the client.
2. Type the following URL into the address field in the browser:

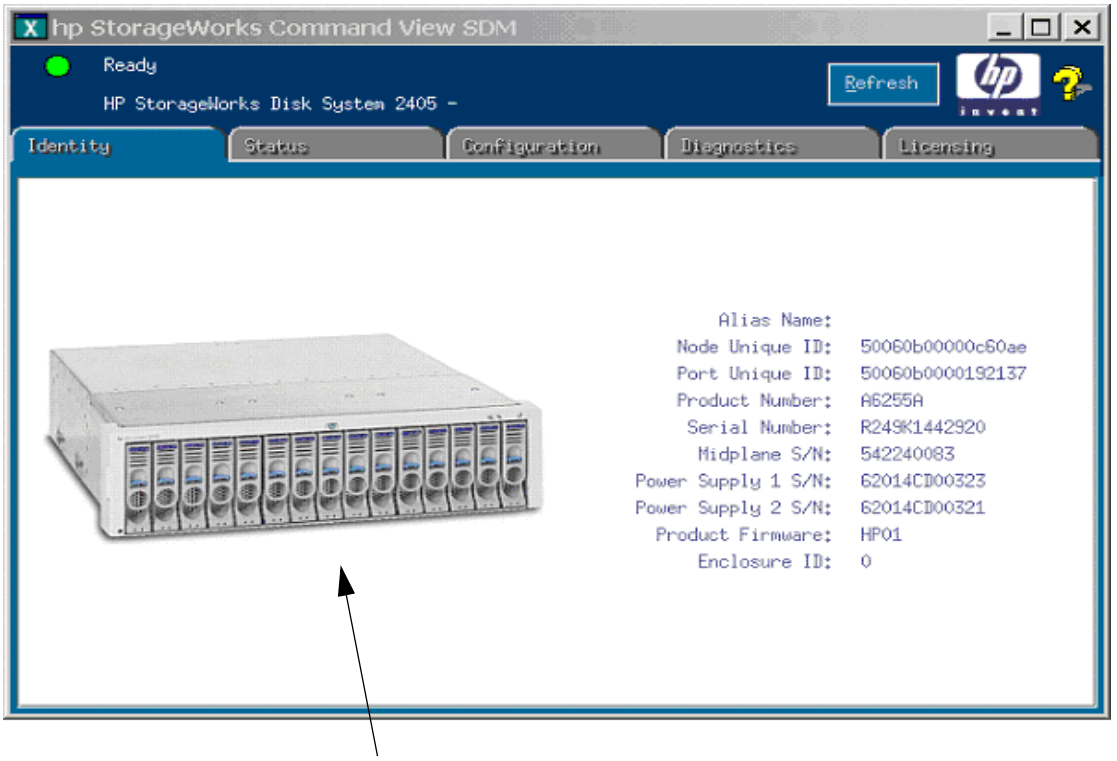
   `http://<hostname>:4096/cmdviewDS.html?<hostname>:<device-id>`

   `<hostname>` is the DNS name or IP address of the host to which the disk system is connected.

   `<device-id>` is the disk system's alias, serial number, device file, or world wide name.

# Using the Command View SDM GUI

You perform disk system management tasks using the GUI by selecting the appropriate tabs and pages. For detailed information on using the GUI, access the on-line help by clicking the "**?**" located in the upper right corner of the screen.




The image of the disk system will vary depending on the product selected!

## Locating Information

The GUI interface uses a set of tabs to organize the tasks and information presented. The following table should assist you in determining which tab to use to perform a task.

**Table 8** GUI Navigation Overview

| Tab | Task/Information |
|---|---|
| **Identity** | Displays general information about the disk system. |
| **Status** | Status information is organized into three categories:<br>— Device Status - general disk system status<br>— Component Status - complete status information for each hardware component in the disk system. Select the appropriate enclosure icon to display its status. |
| **Configuration** | Allows you to define an alias name assigned to the disk system. |
| **Diagnostic** | Identifies the current state of each disk within the disk system. The Identify feature allows you to flash the LEDs on the selected disk(s). |
| **Licensing** | Displays information about licenses for the JBOD. |

## Managing the DS 2300 in Split Bus Mode

In split bus mode, only a subset of the installed disks are available from each Disk System 2300 BCC (bus controller card). Only the disk slots that are accessible from a BCC can be managed through that BCC. In the GUI interface only the disks that are accessible from the BCC will appear, even though there may physically be more disks inserted in the enclosure. The inaccessible slots will be displayed as uninstalled.

Similarly, any operation performed on an inaccessible slot (blinking the LED for example) will be ignored.

# Command Line User Interface

4

The HP Command View SDM Command Line User Interface (CLUI) is a set of commands and associated utilities that provide user management for the disk system. Each utility performs a different management task, such as configuring, reporting status information, or reading disk logs. These utilities include:

- JBODdld - download firmware to the disk system
- JBODdsp - display disk system status and configurations
- JBODfmt - format individual disks in the disk system
- JBODlog - read log entries from individual disks in the disk system
- JBODmgr - manages the disk system configuration parameters
- secadmin - configure users to use the CVSDM CLI and GUI

Each command contains optional parameters that modify the operation of the command. These commands and their options are described in this chapter. The operation of the commands is identical for all operating systems: Windows, HP-UX, and Linux Red Hat.

**Note** If you are unfamiliar with the operation of the disk system, you should use the graphical user interface for performing disk system management operations, described in "Graphical User Interface on page 69".

# Entering Commands

When a utility command is entered from a command line prompt (followed by a <return>), the command utility is performed. For example, to display the status of the disks and other field replaceable units in a disk system with the alias of "myDevice", enter the disk system display command, JBODdsp, with the options shown:

```
JBODdsp -e myDevice <return>
```

**Note** Performing a <return> for command execution is assumed in the remainder of this document and is not shown.

## Command Syntax Conventions

The following symbols are used in the command descriptions and examples in this chapter.

**Table 9** Syntax Conventions

| Symbol | Meaning |
|---|---|
| < > | Indicates a variable that must be entered by the user. |
| \| | Only one of the listed parameters can be used (exclusive OR). |
| [ ] | Values enclosed in these braces are optional. |
| { } | Values enclosed in these braces are required. |

## Command View SDM man pages

Online man pages are included for each Command View SDM command. Each man page includes detailed information about the command and its usage.

To display the man page for any Command View SDM command, type:

```
man <command_name>
```

Substitute one of the Command View SDM utility names for `command_name`. For example, to access the JBODdsp man page, type:

```
man JBODdsp
```

## Quick Help

A quick listing of the syntax and available options for a command can be displayed by using the "?" option with the command. For example, for quick information about the JBODmgr command, type:

```
JBODmgr -?
```

# Using Identification Variables

Variables are used in the presentation of the commands in this document to identify the disk system. The variable is used in the command lines, display responses, and error messages.

## Disk System Identification *<device-id>*

*<device-id>* or *<hostname:device-id>* is the variable that identifies the disk system for the command operation. If the disk system is connected to a remote host, "hostname:" must be included in the identifier. Four possible device IDs can be used:

- Device File
- Serial Number
- Port Unique ID
- Alias Name

The `JBODdsp -i` command can be used to display the serial number, alias, and unique ID of the disk system and the disk modules within it.

## FRU Location

Each field replaceable unit (FRU) within the disk system enclosure can be identified using the following syntax:

<FruLocation> = <Fru Type> <Fru Slot>

Example: C1-C<n>, J1-J<n>, D1-D<n>, F1-F<n>, P1-P<n>

Where:

<Fru Type> <Fru Slot>

= D1 - Dn - disk modules in slots 1 through n. The maximum number of disk modules will vary by product.

= C1 - C2 - controller modules in slots 1 or 2

= P1 - P2 - power supply modules in slots 1 or 2

= F1 - F2 - fan modules in slots 1 or 2

= J1 - Jn - port slots 1 through n. The maximum number of port slots will vary by product.

# Command View Disk System Commands

This section describes each Command View SDM command, its use, and its options. Examples are included showing the typical use of the command.

# JBODdld

## Description

The JBODdld command allows a user to download firmware to disks or controllers.

**Caution** Only wrapped file formats should be used when downloading firmware to the disk system. The use of wrapped files eliminates the possibility of downloading the wrong firmware file. Wrapped files can be identified by the .frm file extension. If the firmware file has another extension, it should not be used.

## Syntax

JBODdld {-L | -D} -f <*filename*> <*device-id*>[,<*device-id*>,...]

JBODdld {-L | -D} -f <*filename*> -d <*device-list-filename*>

JBODdld -?

## Options

| | |
|---|---|
| -D | Download firmware to the disk specified by <*device-id*>. Firmware can be downloaded to multiple devices by specifying a comma-separated list of <*device-id*> parameters. |
| -L | Download firmware to the controller specified by <*device-id*>. Firmware can be downloaded to multiple devices by specifying multiple <*device-id*> parameters. |
| -d <device-list-filename> | Identifies a file containing a list of devices to which firmware will be downloaded. Each line of the file may contain one or more download target device IDs. If multiple devices are included on the same line, they must be separated with commas. Blank lines are allowed. |
| -f <*filename*> | Location of device firmware file |
| -? | Display extended help message. This option overrides all other switches. |

## About Firmware Files

The following information applies when downloading firmware files.

- The command looks for firmware files in the specified path. If the current working directory is the `..\commandview\client\sbin` directory, the path need not be specified.
- Wrapped files (.frm) contain header information that allow the download utilities to verify that the firmware file matches the hardware component. Only wrapped files should be used when downloading firmware.

## Disk System Firmware Download Issues

### Unsafe Removal of Device on Windows 2000

After performing a firmware update on either disks or disk systems connected to a Windows 2000 host, you will likely see an "Unsafe Removal of Device" pop-up warning, some time after the device completes its reset. To clear this condition, click OK on the pop-up warning, then run "armdiscover" at a command prompt.

### Disk System 2300 Firmware Update

After downloading firmware to a DS 2300 enclosure services controller, the firmware revision may not immediately be updated to the new version. This is because it can take several minutes for the controller to send the firmware image to its peer controller. When the transfer is complete, the controller will reset itself and the new firmware revision will reported.

### DS 2405 Warning Status During Firmware Mismatch State

During a DS 2405 firmware update, the controllers will report a Warning status due to the mismatch of firmware revisions between them. The firmware image is NOT automatically copied to the other DS 2405 controller, so the warning status will persist until you complete the firmware update on the second controller.

## Examples

Download firmware file A5236A.HP09.frm to an enclosure controller with alias FC10-2A.

```
JBODdld -L -f A5236A.HP09.frm FC10-2A
```

Download firmware file ST39102FC.HP03.frm to disks with serial numbers 3CD1JM4K and 3CD1L9CX.

```
JBODdld -D -f ST39102FC.HP03.frm 3CD1JM4K,3CD1L9CX
```

Download firmware file ST318406LC.HP05.frm to the disks listed in device list file diskupgrade.

```
JBODdld -D -f ST318406LC.HP05.frm -d diskupgrade
```

# JBODdsp

## Description

The JBODdsp command allows a user to display physical, configuration, and status information about the enclosure. It does not alter the state of the enclosure. It is a display-only utility.

JBODdsp displays status and configuration information for the disk enclosure identified by <*device-id*>. A list of the device IDs of all supported disk enclosures connected to the host can also be displayed. If no option is specified, the header information for the given <*device-id*>, including the vendor, product ID, firmware revision, serial number, and unique ID, will be displayed. In the case of a disk device, the unique ID will be the World Wide Name. In the case of an enclosure controller, the unique ID will be the string concatenation of the vendor, product ID and serial number.

## Syntax

JBODdsp [-a | -c | -e [<*FruLocation*>] | -f] <*device-id*>

JBODdsp -i [<*HostName*>] [ -b | -v ]

JBODdsp -?

## Options

| | |
|---|---|
| -a | Display the information presented by the -c and -e options. This is a quick way of displaying all configuration and status information about a disk enclosure. |
| -c | Display controller information for a disk enclosure. |
| -e [<*FruLocation*>] | Display enclosure information. If <*FruLocation*> is not given, display a summary listing of all components. If <*FruLocation*> is given, display detailed information for the specified component. |
| -f | Display a listing of FRUs in an enclosure. Include FRU location, description of hardware, identification, and status. |

-i [<*HostName*>] [ -b | -v ] Display the serial number, alias, world wide name, device file name and unique name of all disk systems connected to the host. <*HostName*> denotes the remote host for which information will be displayed. If no value is specified, local host will be assumed.

If the -b option is included, an abbreviated list is displayed. If the -v option is included, a detailed list of devices, including all known preferred management paths to each device, is displayed.

-? Display extended usage message. This option overrides all others.

## Examples

Display general information about an enclosure controller identified by /dev/rscsi/c4t10d0.

```
JBODdsp /dev/rscsi/c4t10d0
```

Display general information about a disk device with unique ID 2000002037e19e10.

```
JBODdsp 2000002037e19e10
```

Display all status and configuration information for an enclosure controller with alias Enclosure-1A.

```
JBODdsp -a Enclosure-1A
```

Display enclosure controller information for a disk enclosure controller with device descriptor \\.\scsi2.0.2.0.

```
JBODdsp -c \\.\scsi2.0.2.0
```

Display status of power supply 1 in a disk enclosure with alias Enclosure-1B.

```
JBODdsp -e P1 Enclosure-1B
```

Display location, description, and status of FRUs in a disk enclosure identified by device file /dev/rscsi/c4t10d0.

```
JBODdsp -f /dev/rscsi/c4t10d0
```

Display device identification for all disk enclosures and all disk mechanisms connected to the host identified by HostName.

```
JBODdsp -i HostName
```

# JBODfmt

## Description

The JBODfmt command formats a disk device with a 512-byte block length.

## Syntax

JBODfmt { -f | -foverride } <*dev-id*>

JBODfmt -?

## Options

| | |
|---|---|
| -f | Format the disk specified by <*device-id*> |
| -foverride | Format the disk with a 512-byte block length, regardless of current format. This will force a format even if the disk is already formatted to 512-byte blocks. |
| -? | Display extended help message. Overrides all other switches. |

## Examples

Format the disk device identified by device descriptor \\.\scsi2.0.0.0.

```
JBODfmt -f \\.\scsi2.0.0.0
```

# JBODlog

## Description

JBODlog provides access to the disk logs stored in the disk mechanism identified by <*device-id*>. These logs contain information useful for diagnosing and troubleshooting the disk. If no options are specified, all known formatted pages, as well as the defect list, will be displayed.

## Syntax

JBODlog [-p <*pagenumber*> | -d | -C] <*device-id*>

JBODlog -?

## Options

| | |
|---|---|
| -p <*pagenumber*> | Display the contents of the log for the disk identified by <*device-id*>. The -p option returns the log information identified by <*pagenumber*>. |
| -d | Display the defect list for the disk identified by <*device-id*>. |
| -C | Clear the cumulative device logs on the selected device |
| -? | Display extended help message. Overrides all other switches. |

## Examples

Display formatted log pages and the defect list for the disk mechanism identified by \\.\scsi2.0.2.0.

```
JBODlog \\.\scsi2.0.2.0
```

Display raw contents of Log Page 2 from the disk mechanism identified by /dev/dsk/c4t2d0.

```
JBODlog -p 2 /dev/dsk/c4t2d0
```

Display the defect list for the disk mechanism with unique ID 200000203722aa90.

```
JBODlog -d 200000203722aa90
```

Clear the logs on the disk device with serial number L3N662500000.

```
JBODlog -C L3N662500000
```

# JBODmgr

## Description

The JBODmgr command allows a user to configure the enclosure characteristics. JBODmgr manages the operating environment of the disk enclosure by providing access to the settings used to control operation. Disk self-tests can also be initiated using this command.

## Syntax

JBODmgr {-d <*FruLocation*> {on|off} | -D <*alias*> | -ST {d|e|s|x}} <*device-id*>

JBODmgr -?

## Options

| | |
|---|---|
| -d <*FruLocation*> {on\|off} | Identify the <*FruLocation*> by blinking the associated LED. |
| -D <*alias*> | Change the enclosure's alias name (limited to 256 bytes). |
| -ST {d\|e\|s\|x} | Run a disk self-test. The test type and corresponding method of viewing the results are defined by the accompanying parameter:<br>d - Default disk self-test. Any error will be shown at the command prompt. If no error message is displayed, the test was successful.<br>e - Extended background mode test. Results are stored in Disk Log Page 0x10, which can be retrieved using the JBODlog command.<br>s - Short background mode test. Results are stored in Disk Log Page 0x10, which can be retrieved using the JBODlog command.<br>x - Cancel any background test in progress. Only the short or extended tests may be cancelled. Results are stored in Disk Log Page 0x10, which can be retrieved using the JBODlog command. |
| -? | Display extended help message. Overrides all other switches. |

## Examples

Turn on the LED associated with disk D3 in a disk enclosure with alias Enclosure-1A.

```
JBODmgr -d D3 on Enclosure-1A
```

Set the alias name of the disk enclosure identified by unique ID HPA5236AUSSA05001707 to FC10-1.

```
JBODmgr -D FC10-1 HPA5236AUSSA05001707
```

Run the default self-test on the disk identified by device ID 2000002037efc243.

```
JBODmgr -ST d 2000002037efc243
```

# secadmin

## Description

The `secadmin` command configures the user to use the CVSDM GUI and CLUI.

**Note** Regardless of what group a user is in (user/administrator), all users are allowed access to all CVSDM CLUI and GUI commands. Only users in the Administrator group are allowed to configure and manage users for the GUI and CLUI using the `secadmin` command.

## Syntax

```
< CMD-SCRIPT > -user <user> -pass <pwd>
< CMD-SCRIPT > -user <user> -pass <pwd> <ARGS>
ARGS:
```

`[user1 passwd1 ...]`—Adds the list to the Administrators group

`localuser`—Adds the current User:localhost to the Administrators group

`checksecurity`—Checks the status of the security flag

## Options

Log in to the secadmin prompt using the user name and password created previously or using "admin/nimda." Always log in as a user with Administrator privileges to create users or assign the group privileges to the users. Any new Administrator accounts created using the `secadmin` script can also be used.

```
secadmin -user <admin-user> -pass <admin-pass>
```

This command displays the following interactive menu to the user:

```
Press 'g' to add a GUI user.
Press 'c' to add a CLI user.
Press 'd' to delete a user.
Press 'lg' to list existing GUI users.
Press 'lc' to list existing CLI users.
Press 'x' to exit.
Enter command: <Enter your option here>
```

| Option | Description |
|---|---|
| g | Prompts user to enter "User name:" / "Password" and "Select group (a\|u):". On entering valid options, a user will be added to the security database. A user that belongs to the Administrator (a) group can manage other users and log in as a GUI user. A user that belongs to the user (u) group can log in as a Command View GUI user and perform all SDM operations using the GUI. |
| c | Prompts user to enter "User name:" / "Host name:". On entering valid options, a user that can execute all CLI commands will be added to the security database. |
| d | Prompts user to enter "User name:". If an account with that user name exists, that account will be deleted. |
| lg | Lists all existing GUI users. |
| lc | Lists all existing CLUI users. |

# Examples

If you log in as user `cvsdm` to use the Command View SDM user interface, you can add yourself as the administrator without logging into the `secadmin` interactive mode. Enter the following command:

```
secadmin -user admin -pass nimda -localuser
```

Logging in as the administrator provides you with administrative privileges to administer other security users.

To check if Security is enabled or disabled, enter the following command:

```
secadmin -user admin -pass nimda -checksecurity
```

# Command View User Interface

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The Command View User Interface (CVUI) adds a simple, text menu-based interface as a front end to the Command View SDM commands.

Some of the benefits the CVUI offers include:

- **Full functionality** - the CVUI provides the same complete management capability and functionality as the Command Line User Interface (CLUI).
- **Ease of use** - the menu structure relieves you of the need to memorize command syntax. This is useful if you use the command infrequently.
- **Easy remote access** - the CVUI is particularly useful when using telnet to connect to a remote Command View SDM host.

# Starting the Command View SDM CVUI

The Command View User Interface is started from a command line. To start the interface, enter the appropriate command:

```
cvui      << From a local host
cvui -h <hostname>   << From a remote client
```

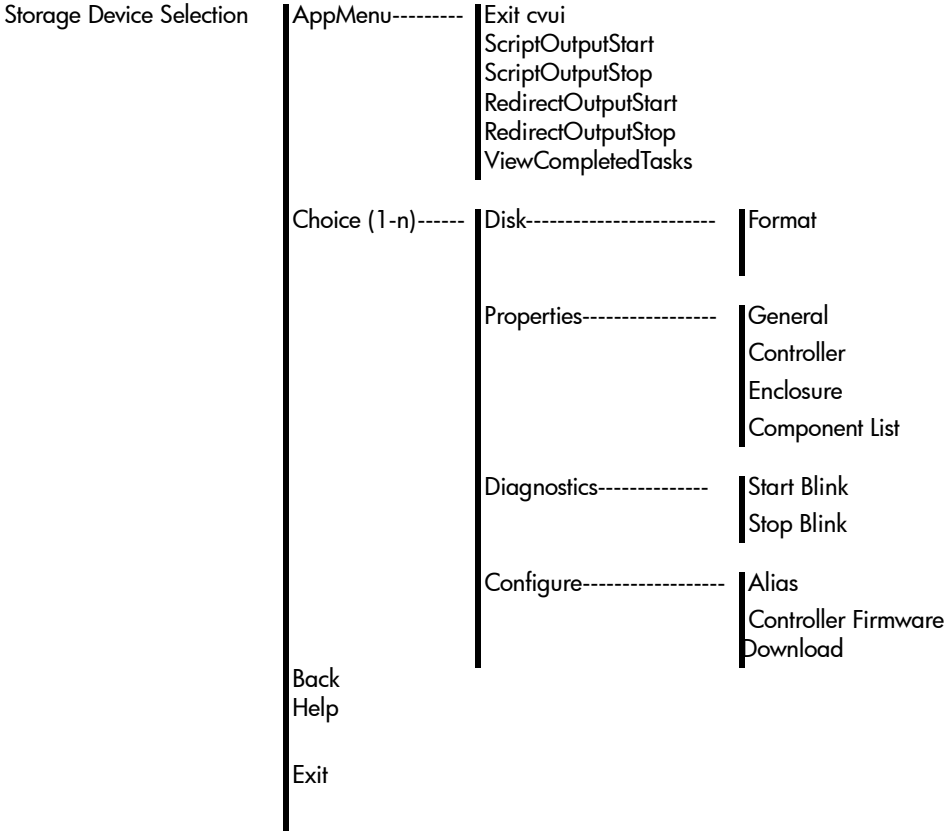
When the command line is entered, the CVUI will display the first screen. This screen lists miscellaneous server information plus a list of disk systems attached to the host, as shown below.

```
_____________________________________________________________________
                          CVUI version 1.01.0011

Storage Device Selection

Choice  Device Id             Alias        Device Type
=====================================================================
     1  20000020370fef68                   HP JBOD Disk
     2  20000020370fe7ec                   HP JBOD Disk
     3  HPA5236AUSSA08016022  FC10-JBOD-1  HP JBOD Controller
     4  HPA5236AUSSA05001707  FC10-JBOD-2  HP JBOD Controller
     5  Refresh

(1-5=Choice, a=App menu, h=Help, x=eXit)>
_____________________________________________________________________
```

To perform an operation, identify the number or letter of the item you want, then enter that number or letter at the command line. This will advance you to the next screen where additional selections will be presented. The available selections for each screen are listed in the row at the bottom of the screen.

Several levels of menus are required to execute a command. Continue entering the number of the operation until the action is performed. A menu showing the various menu selections is provided on the following page (some additional levels are not shown). For additional help on the operation of this interface, select “h” from any CVUI screen.

# CVUI Menu Map



# Solving Problems

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This chapter identifies problems you may encounter when installing and using Command View SDM. It takes you through the steps typically required to solve each problem. If the problem you are experiencing is not include here, the following resources may provide a solution.

- HP support contact
- HP support web site
- HP storage forums

PROBLEM

**I get a 401 error when trying to manage the disk system from a browser.**

SOLUTION

This indicates that the correct access permissions have not been set on the Command View host. Access permissions are managed using a configuration file on the Command View host. To allow a remote client to manage the disk system, the IP address of the remote client must be added to the file.

The following files are used to control client access:

- `access.dat` - HP-UX, Linux, and Windows (standard installation)
- `authorizedClients.dat` - HP OpenView Storage Area Manager (SAM) installation

To set up remote client access:

1. On the Command View SDM host, open the configuration file in an ascii text editor. The file is located in the following directory:

```
/opt/sanmgr/hostagent/config/ << HP-UX and Linux
\Program Files\Hewlett-Packard\sanmgr\hostagent\config\    << Windows
\Program Files\Hewlett-Packard\sanmgr\managementserver\config\<< HP OpenView SAM
```

2. Add the IP address for each client requiring access to the disk systems connected to the host. Or remove the IP address for any clients you no longer want to have access.

Single client IP addresses can be added, or a range of IP addresses can be added using the wild card "*". For example; 10.62.128.* grants access to any client on subnet 128. The use of wildcards is recommended when connecting from clients configured for dynamic host configuration protocol (DHCP).

3. Save the configuration file.
4. Verify that the client browser now has access by entering the following URL:

   ```
   http://<hostname-or-ipaddress>:4096
   ```

   The following message should be returned by the host:

   ```
   (c) Copyright 2000-2002 - Hewlett-Packard Company

   hp StorageWorks Command View web server
   ```

PROBLEM

**After installing Command View, the disk systems I expected to see in the Launcher do not appear.**

**When I run the JBODdsp -i command, the disk systems I expected to see in the output do not appear.**

SOLUTION

During the software installation process, the armdiscover command is launched to locate all disk systems connected to the host. This information is then used to populate the Launcher screen. If there is a functional disk system connected to the host that does not appear in the Launcher screen, it may be necessary to repeat the discovery process.

To rediscover the disk systems:

1. Check the disk system hardware and make sure it is operating properly, and that the disk system is connected to the host, switch, or hub.
2. Manually stop the HostAgent and OpenDIAL services. See "Starting/Stopping HostAgent and OpenDIAL" on page 48.
3. Delete all files in the `../sanmgr/hostagent/pdb` folder. This causes OpenDIAL to rebuild the database files with the disk storage devices that are discovered.
4. Manually restart the HostAgent and OpenDIAL services.
5. Execute the `armdiscover` command to initiate the discovery process.
6. Check the Launcher to ensure the disk system is now displayed. You can also execute the `JBODdsp -i` command to display the disk systems that were discovered.

If this does not solve the problem, contact support for assistance.

PROBLEM **Command View is not working properly. I have exhausted all other possible solutions without success.**

SOLUTION Remove and reinstall the Command View SDM software. Before doing so make sure the host meets all necessary requirements.

PROBLEM **I get "Out of Memory" errors on my HP-UX host**

SOLUTION This is typically caused by the kernel thread count being set to low. See "Changing Thread Count" on page 27 for information on correcting this problem.

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